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# PARTITION OF POTASSIUM IN STORED BLOOD

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The increasing use of stored blood for transfusion purposes calls for an extension of our knowledge of the stability of the human red cell when kept for long periods *in vitro*. In general the normal properties of the red blood corpuscle appear to be best preserved in undiluted human plasma; but an indication of rapid changes in the chemistry of shed blood is found in work upon blood potassium, immediate separation of the formed elements being necessary if a true estimate of the plasma potassium is to be obtained (Myers and Short, 1921; Wilkins and Kramer, 1923; Dulière, 1931a, 1931b). Recently Scudder, Drew, Corcoran, and Bull (1939) found a rise of plasma potassium when human blood was kept at 2°–4° C. The reported increase was so large that it seemed necessary to repeat the work and endeavour to find a practical method of limiting these changes. A solution to this problem is likely to prove difficult, since Scudder *et al.* also showed that the change in plasma potassium content was independent of the type of anticoagulant used, and that it took place in blood stored, without admixture, under oil.

We here record variations of plasma potassium level in blood stored according to the current practice of the Medical Research Council's Blood Supply Depots. The relation of these changes to haemolysis and the influence of certain physical factors are also discussed.

## Plasma Potassium Level

360 c.cm. of blood from the antecubital vein was collected in the standard M.R.C. bottle, coagulation being prevented by the addition of 180 c.cm. of 1.05 per cent. sodium citrate in 0.85 per cent. sodium chloride. The bottles were capped and stored at 2°–4° C. in the dark (Medical Research Council, 1939; Vaughan, 1939). Sampling, with aseptic precautions, was preceded by thorough mixing of the blood by repeated inversion of the bottle. Formed elements were removed by centrifuging for ten minutes at 4,000 r.p.m. and respinning the supernatant plasma. Control experiments, in which further spinning was carried out, indicated the removal of all red cells. On completion of a series of estimations on any sample of blood the blood remaining in the bottle was tested for infection by incubation at 38° C. for forty-eight hours, with subsequent subculture to broth or agar slopes.

Potassium was estimated by the method of Kramer and Tisdall (1921a). A preliminary series of estimations showed that traces of free haemoglobin caused considerable error, the apparent potassium sometimes far exceeding the whole-blood figure, a fact which had been noticed also by Dulière (1931a). All subsequent estimations, therefore, were made on two aliquots of a trichloracetic acid filtrate, Kramer and Tisdall (1921b) having shown that the presence of this acid does not affect the accuracy of the method. The figures quoted throughout this paper represent the concentration of potassium in the plasma–anticoagulant mixture.

*Results.*—(1) Eighteen bottles of blood were sampled daily for fourteen days. In each the plasma potassium increased rapidly in the first week, averaging 102 ± 17 mg. per 100 c.cm. at seven days.' The process then slowed up, and throughout the second week the values gradually approximated to the whole-blood figures (Fig. 1). It was

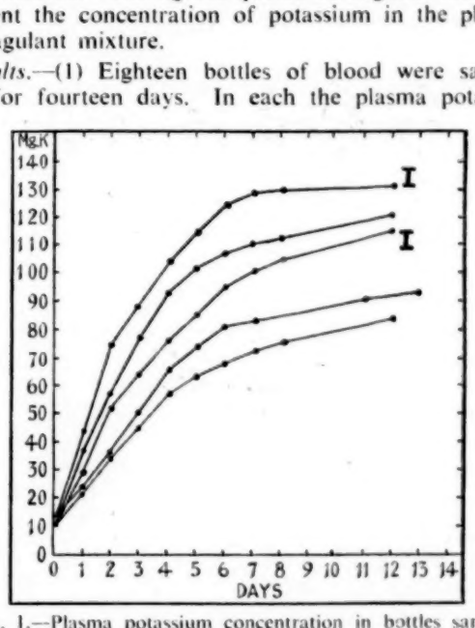


FIG. 1.—Plasma potassium concentration in bottles sampled daily. Ordinate = mg. potassium per 100 c.cm. Abscissa = time of storage in days. Temperature 2°–4° C. "I" indicates bottles infected with air-borne organisms.

difficult to prevent infection of the blood by air-borne organisms when bottles were opened frequently. However, it was found that there was no difference of rate of potassium repartition between infected and non-infected samples.

(2) Random samplings of bottles kept in stock also showed that the plasma potassium concentration is related to the time of storage. The scatter of values indicated a rapid rise in the first week, up to 80 ± 16 mg. per 100 c.cm. at seven days. As before, subsequent estimations showed that the figures approximate to the whole-blood level, though uniform distribution of potassium between cell and plasma may not be obtained even after three months (Fig. 2). The mean potassium value in this

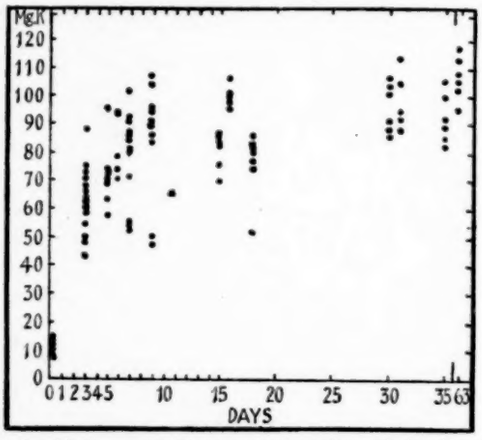


FIG. 2.—Plasma potassium concentration of bottles taken from stock at random. Ordinate = mg. potassium per 100 c.cm. Abscissa = time of storage in days. Temperature 2°–4° C.

series was lower than when the bottles were opened daily; this may be associated with the trauma caused by the repeated disturbance of bottles in the first series.

*Conclusions.*—The distribution of potassium in blood stored in the manner already described changes progressively from the time of shedding. The shift of the cation is very rapid during the first few hours: initially 10 mg. per 100 c.cm., the concentration in the plasma may rise to 15–20 mg. per 100 c.cm. within thirty minutes. The graphs show two phases of redistribution, the rate being relatively rapid throughout the first week and slower after seven days. The flattening of the curves is not due to the attainment of an even distribution of the ion throughout the mixture, because the plasma value is still well below the corresponding whole-blood value. There is considerable variation in the plasma potassium concentrations of blood of the same age—for example, after seven days they range from five to ten times the initial figure. It is impossible to predict the amount of extracellular potassium in any bottle, the rate of redistribution depending apparently upon some specific property of the blood, and the cause of the variation is at present unknown.

## Relation to Haemolysis

The increasing concentration of potassium in the plasma is due to the escape of the ion from the red cells. Not only do these elements form the only large reserve of potassium in the mixture, but control experiments showed that there was no alteration of the plasma potassium concentration in the absence of formed elements. The basic mechanism may involve (*a*) haemolysis, the cell losing both haemoglobin and salts, or (*b*) movement of the cation alone through an altered membrane. The following observations prove that the plasma potassium concentration is not an index of haemolysis:

1. Potassium and haemoglobin concentrations in the plasma vary independently: a more deeply stained plasma may actually contain less potassium than one which is free of pigment.

2. The potassium may increase up to seven times the initial level before haemolysis can be detected by the naked eye.

3. Direct estimations of the haemoglobin in plasma were made by matching against known dilutions of laked blood. The observed haemolysis accounted for a small proportion of the extra potassium only. For example, in Experiment 678 (see table) the liberation by red cells of 0.2 gramme haemoglobin into 100 c.cm. plasma would entail the simultaneous appearance of 2.8 mg. potassium, which is only 3 per cent. of the actual figure.

*Table showing Relation of Haemolysis to Plasma Potassium Increase: Blood–Citrate–Saline Mixture; Temperature 2°–4° C.*

| No. of Experiment | Age in Days | Potassium (mg. per 100 c.cm.) | Haemoglobin gramme % | Potassium Equivalent to Free Hb |
|---|---|---|---|---|
| 678 | 0 | 11 | — | — |
| | 7 | 78 | 0.04 | 0.6 |
| | 14 | 92 | 0.20 | 2.8 |
| 679 | 0 | 13 | — | — |
| | 7 | 73 | 0.03 | 0.4 |
| | 14 | 88 | 0.08 | 1.0 |
| 680 | 0 | 11 | — | — |
| | 7 | 72 | 0.07 | 1.0 |
| | 14 | 90 | 0.17 | 2.0 |

Right-hand column shows theoretical increase of plasma potassium (in mg. per 100 c.cm.) equivalent to estimated loss of haemoglobin from red cells.

## Altered Conditions of Storage

In all the experiments so far reported the blood was kept under conditions far removed from those obtaining in the body. It was venous when taken, and could not undergo any appreciable gaseous exchanges before the bottle was sealed off. It was cooled to a low temperature and diluted with a watery solution of foreign salts. Previous workers have shown that these alterations of environment cause a change of permeability of the cell membrane. Jacobs and Parpart (1931) investigated the effect of oxygen tension and temperature changes on the osmotic resistance of the erythrocyte, and Kerr (1929) followed the movement of potassium between cell and plasma upon the addition of various diluents. The following experiments were an attempt to estimate the part played by such factors in the production of the observed changes.

*Dilution and Salt Concentration.*—Ten samples of blood were studied as follows: (1) three were received on to enough sodium citrate crystals to give a final concentration of 0.305 gramme/100 c.cm. mixture; (2) three were collected into 3 per cent. sodium citrate, 40.8 c.cm./360 c.cm. blood, giving a final concentration as before; (3) four were mixed with a solution of heparin (liquemin), 2.5 c.cm. (= 10 mg. heparin) /150 c.cm. blood. All the bottles were kept at 4° C. and plasma potassium was estimated every forty-eight hours. Reduction of the volume of diluent did not cause significant alteration of the rate of redistribution of potassium, since the figures obtained in Experiment 2 showed a rise in the plasma to 129–132 mg. per 100 c.cm. in seven days. A similar result was obtained in Experiment 1, where sodium citrate crystals were used as the anticoagulant. The use of

heparin in Experiment 3 likewise failed to affect the usual rise in plasma potassium, although the plasma dilution was negligible and there had been no addition of foreign salts (Fig. 3).

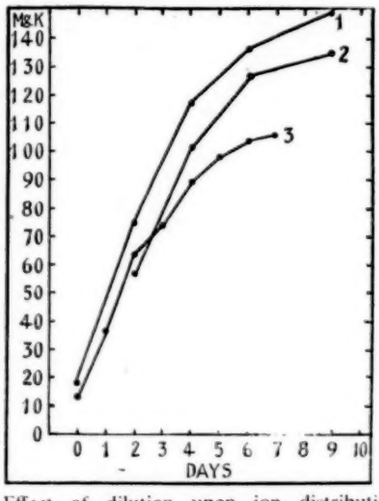


FIG. 3.—Effect of dilution upon ion distribution. Anticoagulant 1 = solid citrate ; 2 = 3 per cent. citrate (initial estimate unreliable); 3 = heparin. Ordinate = mg. potassium per 100 c.cm. Abscissa = time in days. Temperature 2°–4° C.

*Oxygen Tension.*—Four samples of blood were taken into the usual citrate–saline solution. The air in the bottles was replaced by oxygen at two atmospheres pressure, the blood rapidly becoming bright red with repeated inversion of the bottle. The samples were kept at 2°–4° C., the oxygen pressure being maintained. The plasma potassium showed the usual rapid rise to a high level, averaging 82 mg. per 100 c.cm. after six days (Fig. 4). Saturation with $O_2$ under these conditions does not reduce the loss of the ion from the red cell.

*Temperature.*—Eight samples of blood were taken into citrate–saline and studied as follows: (1) two were kept

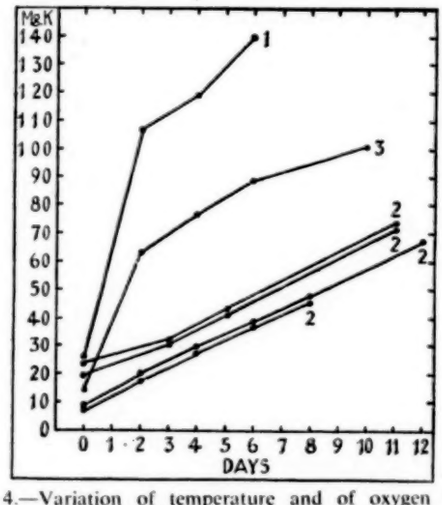


FIG. 4.—Variation of temperature and of oxygen tension. 1 = bottle stored at 38° C.; 2, 2 = bottles stored at room temperature; 3 = storage under two atmospheres oxygen. Ordinate = mg. potassium per 100 c.cm. Abscissa = time in days.

at 38° C.; (2) six were kept at room temperature, protected from draughts. Each bottle in both series was sampled every forty-eight hours. At 38° C. the plasma potassium concentration rose rapidly to 140–150 mg. per 100 c.cm. in six days. On the other hand, in the samples kept at room temperature the rise was significantly less rapid than in any kept at 2°–4° C. The graph for the first week of storage is practically a straight line, the levels reaching only 44 ± 7 mg. per 100 c.cm. in six days (Fig. 4).

The bottles were sampled by a closed method, and air entering was passed through a Jena glass filter. In spite of these precautions all the bottles of this series were found to be infected with air-borne organisms to an extent which prevented accurate assessment of the influence of temperature on the repartition of potassium. The findings do suggest, however, one means of slowing up the process, although obviously this would only prove useful if infection of the blood could be prevented absolutely.

## Discussion

Our results confirm those of Scudder *et al.*, and show that the total amount of extracellular potassium in M.R.C. bottles stored at 2°–4° C. may be 0.2–0.4 gramme within one week. This change is much greater than any other yet demonstrated in blood during the first two weeks of storage; and, whatever the clinical interest, it does provide one useful index for comparing different methods of preserving blood for transfusion purposes.

It is known that potassium salts are toxic when administered in large amounts, the ion affecting particularly the cardiovascular system—for example, Thomson (1939) has recorded pronounced changes in the electrocardiogram when potassium salts were administered per os. There is, however, no clinical evidence that the amount of potassium likely to be available in the volume of blood generally used for transfusion would be sufficient to produce toxic manifestations. Indeed, the absence of toxic symptoms in cases receiving large volumes of stored blood suggests that this repartition of potassium may be of minor clinical importance only.

The desire to find a means of limiting or preventing the repartition of potassium is only partially realized. The movement of the ion is considerably less at room temperature, but the possibility of infection is much increased and introduces an undesirable complication unjustifiable in practice.

## Summary

In blood stored according to current Medical Research Council specifications the plasma potassium concentration rises rapidly during the first week to five to ten times the initial level; thereafter the rise is comparatively slow.

The source of this potassium is the red cell, from which it is liberated quite independently of haemolysis.

At room temperature the plasma potassium concentration rises much less rapidly, reaching only 44 ± 7 mg. per 100 c.cm. in six days.

Reduction of the volume of diluent, absence of foreign salts, increase of oxygen tension, or storage at 38° C. did not reduce the rate of redistribution of the ion.

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# 3,144 CONSECUTIVE DELIVERIES WITHOUT A MATERNAL DEATH DUE TO PREGNANCY

BY

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The Croydon Obstetric Service has, between January 3, 1938, and June 4, 1939, conducted 3,144 consecutive deliveries after the twenty-eighth week, among which a maternal death attributable to pregnancy has not occurred. (One mother died of pneumococcal pneumonia and empyema, the cause of death being confirmed by post-mortem examination. She had been ill for seven days before she was delivered, on the last day of her illness, of a thirty-eight-weeks live baby, after a labour of about six hours. This was the only death among the deliveries covered by the series, and cannot be considered attributable to pregnancy.)

The series is comprised of 2,015 cases delivered in the two hospitals of the Croydon County Borough—namely, Mayday Hospital and St. Mary's Maternity Hospital—and 1,129 cases delivered by the Municipal Domiciliary Service. Of the hospital deliveries 1,194 booked cases and 129 emergency cases were delivered in the Mayday Hospital maternity department, and 692 booked cases in St. Mary's Maternity Hospital. The 1,129 municipal domiciliary cases were also booked, the total booked deliveries therefore numbering 3,015. All the patients booked for hospital and almost all the domiciliary patients received their ante-natal supervision at the borough ante-natal clinics, a short description of which is given below. Many of the booked and emergency cases had been sent to the clinics or to hospital by their own medical practitioners on account of abnormalities arising during pregnancy or labour, and a certain proportion of these had been seen by me in my capacity of obstetric consultant to the borough, either at the clinics or at their own homes, in consultation with the practitioners concerned. Of the 1,129 domiciliary patients, ninety-two had booked the services of their own practitioners, the borough midwives attending in the capacity of "maternity nurses." This number is included in the series, as the borough midwives were in attendance. Of the remainder, a number had been supervised by independent midwives, and others had had no supervision at all. It will be seen, therefore, that the cases which comprise the series are drawn from all possible sources, and have the greater interest on that account.

## Description of the Service

The Croydon Obstetric Service provides complete ante-natal, natal, and post-natal supervision under the clinical direction of the same whole-time specialist, the ante-natal clinics, Mayday Hospital (forty-eight maternity and twenty-nine gynaecological beds), St. Mary's Maternity Hospital (thirty-two beds), the domiciliary midwifery service (superintendent and eleven midwives), and the post-natal clinics constituting the links in the chain. The services of the borough obstetrician are at the disposal of all the medical practitioners in the area. Independent midwives may send their patients for single consultations or for complete ante-natal supervision as desired. As indicated above, the borough midwives attend as maternity nurses those patients who have booked the services of their own doctors. Practically all the obstetric emergencies which occur in the borough are admitted to the maternity department of Mayday Hospital. The greatest care is taken to ensure the fullest co-operation, both within the Service itself and between the Service and the medical practitioners and independent midwives in the borough. The Service has the advantage of the advice of the Council's consultants, of which it makes free use, particularly that of the radiologist, pathologist, physician, tuberculosis physician, orthopaedic surgeon, and the dental surgeons.

## Ante-natal Supervision

Six ante-natal clinics are held each week for patients booked for hospital delivery, the conduct of which is shared equally by three lady assistant medical officers of health. All new patients see first the lady almoner, who makes full inquiry into their home conditions and financial position. They then undergo an exhaustive examination by the medical officer, which includes all aspects of their general health as well as their obstetric condition. On the results of this examination, and bearing in mind the information supplied by the almoner as to their home conditions, the decision is made as to which patients should be allotted beds in hospital and which are suitable for delivery at home by the domiciliary branch of the Service. In allocating beds preference is given to abnormalities, primiparae, and those whose home conditions are unsuitabie. The previous obstetric history is given full consideration, and women who have had difficult labours, placenta praevia, accidental haemorrhage, toxaemia, etc., are automatically booked for hospital delivery. Cases thought to be normal, and whose home conditions are satisfactory, are referred to the superintendent municipal midwife, who makes the necessary arrangements for home delivery and for ante-natal care at the municipal midwives' clinic. The reference of normal cases to the domiciliary midwifery service has considerably relieved the strain on the in-patient accommodation, and provides the domiciliary service with a large proportion of its patients. In all cases of doubt as to the suitability for home delivery the case is referred to the obstetrician.

Three ante-natal clinics a week are held for patients booked for home delivery; these are conducted by the assistant medical officer who resides at St. Mary's Maternity Hospital. If during the course of this supervision any abnormality is discovered which makes it inadvisable for the patient to be delivered at home she is referred to the obstetrician, who makes the necessary arrangements for transfer to the hospital list. There is thus a treble check on the patients of the domiciliary service, by which it is hoped that all abnormalities are recognized and ensured proper treatment.

## Routine Attendances at the Clinics

Patients attend monthly up to the twenty-eighth week, fortnightly up to the thirty-sixth week, and weekly from then until delivery. Urine is tested and blood pressure recorded at each visit by health visitors specially trained in ante-natal work All cases are seen by the medical officer at the thirty-second, thirty-sixth, and thirty-ninth weeks, an abdominal examination being made on each occasion. The examination at the thirty-second week is specially directed to the discovery and correction of breech presentation. If external version fails the patient is referred to me. If I also am unsuccessful in the clinic the patient is admitted to hospital, placed in the Trendelenburg position for a period of one to two hours, and external version again attempted. This simple manœuvre has been found very successful in many cases, in that it displaces the breech out of the pelvis by gravity, rendering the subsequent version easier. Quite a number of spontaneous versions have been found to occur while the patient has been in the Trendelenburg position. It is thought that the reversal of the foetal poles in relation to gravity combined with the displacement of the foetus would account for this. In only a few instances has version under an anaesthetic been performed. By the above methods about 75 per cent. of all breech presentations are corrected.

The examinations at the thirty-sixth and thirty-ninth weeks reveal non-engagement of the head suggestive of placenta praevia, disproportion, abnormal attitudes of the foetus, and so on. All cases showing any form of abnormality, whatever the cause, are referred to the obstetrician. It has been my

practice to continue the supervision of such patients personally until delivery, generally making an examination every week. During the period covered by the series now reported I carried out 1,885 such examinations. In this way I maintain contact with practically every abnormal booked case in the Service.

In regard to pelvimetry, in addition to the usual external measurements the transverse diameter of the outlet is taken as a routine in all primiparae and in multiparae whose obstetric histories show any evidence of delay in the second stage. The method used is that of the clenched fist, the four inner knuckles being pressed between the ischial tuberosities. The measurement is entered as 4K, 4K+, 4K++, each + meaning 1/4 inch. For correct mensuration it is essential for the examiner to know the exact width of his (or her) own knuckles, which should be measured with the callipers.

All cases of outlet contraction are referred to me about the thirty-fourth week. I check the outlet, palpate the pubic arch, and by rectal examination the coccyx, ischial spines, and lower sacral curve. If I am not satisfied the patient is admitted for a pelvic examination under anaesthesia. Moderate degrees of contraction in which dystocia is anticipated if allowed to go to term are treated by surgical induction at the time when the foetus is thought to have the best chance of survival. In cases where the outlet is so contracted that a foetus of 5 lb. is not likely to pass with safety, Caesarean section at term is performed.

In regard to the toxaemias, all patients with raised blood pressure, with or without albuminuria, are admitted to hospital for investigation and treatment. Urea-clearance tests and blood-urea estimations are done in all cases which do not react to treatment in a reasonable time or whose condition gets worse in spite of treatment. Patients who become normal are discharged to await labour. Those who do not are retained in hospital until such time as intervention appears necessary. By continued observation and timely intervention it is hoped to avoid the dangers of eclampsia, accidental haemorrhage, and permanent renal damage.

*Placenta Praevia.*—All booked patients are warned, by a notice on their appointment cards, that if bleeding occurs they should lie down at once, and either send for a doctor or come into hospital. Persistent malpresentation or non-engagement of the head, in the absence of other definite cause, is looked upon as very suspicious of placenta praevia, and such cases are admitted to hospital for examination under anaesthesia. In this way many cases of placenta praevia have been diagnosed before there has been any warning haemorrhage at all. Caesarean section is done for the central type, and the others are treated by rupture of the membranes and the application of vulsellum forceps to the scalp. Vulsellum forceps are used in preference to Willett's forceps to avoid the sloughing of the scalp which so often occurs after using the latter instrument. After the vulsellum forceps are in position the handles are surrounded with sterile gauze soaked in 1 per cent. acriflavine, and a nurse sits by the labour bed with instructions to watch for any bleeding, which she can see at once by lifting the upper edge of the gauze, and which she can control by gentle traction on the handles. No more traction is applied than is sufficient to control the bleeding, and none is applied in the absence of bleeding. The danger of pulling the forceps off the scalp, and the amount of damage to the scalp, are thus reduced to the minimum. Similarly, the amount of pressure on the placenta is much reduced, with a corresponding increase in the chances of survival of the foetus. In only one case in this series has an internal version been done for placenta praevia, that being a shoulder presentation.

In Table I are shown some of the major abnormalities treated, together with Caesarean sections and forceps deliveries, in the two hospitals. It must be remembered that Mayday Hospital takes all the emergencies and by far the greater proportion of abnormal booked cases. The lower segment operation was done in forty-nine out of the seventy-four cases of Caesarean section. Spinal anaesthesia was employed in fifty-nine out of the seventy-four Caesarean sections. The solution used was heavy percaine, specific gravity 1024 (Ciba, Ltd.), the routine quantity injected being 2,5 c.cm. Ephedrine 1/2 grain was given as a routine before starting the operation. The anaesthesia obtained was perfect in every instance, and was found particularly suitable for the lower segment operation, relaxation of the abdominal muscles being so complete that full exposure of the site of the uterine incision is easily secured by means of a Doyen retractor, both the opening and the subsequent closure of the uterus thus being greatly facilitated. In no instance was there any anxiety referable to the anaesthetic.

TABLE I.—*Some Major Abnormalities Treated, together with Caesarean Sections and Forceps Deliveries*

| | Mayday Hospital | | St. Mary's Hospital | Total |
|---|---|---|---|---|
| | Booked | Emergency | | |
| Placenta praevia | 23 | 11 | 7 | 41 |
| Accidental haemorrhage | 13 | 9 | 1 | 23 |
| Hydramnios | 21 | 1 | 4 | 26 |
| Eclampsia | 0 | 4 | 0 | 4 |
| Toxaemia, including all cases of albuminuria and/or hypertension | 247 | 26 | 116 | 389 |
| Shoulder presentation | 4 | 4 | 2 | 10 |
| Prolapsed cord | 4 | 1 | 4 | 9 |
| Forceps deliveries | 51 | 8 | 35 | 94 |
| Caesarean section | 51 | 11 | 12 | 74 |

*Medical Aid in Domiciliary Cases.*—The practice followed by the municipal midwives where medical aid is required for abnormalities arising during labour is the usual one of calling in the patient's own medical practitioner, the form prescribed by the Central Midwives Board being filled in. The figures for forceps deliveries and other procedures carried out by practitioners among the 1,129 domiciliary patients are: forceps, 25; extended breech, 2; simple breech, 1; transverse, 1; manual removal, 3. There were no stillbirths or infant deaths among these deliveries.

### Live Births, Stillbirths, and Infant Deaths

Among the 3,144 deliveries there were thirty-two sets of twins and one set of triplets. The total number of infants born was therefore 3,178. The distribution of multiple births was as follows. Twins: Mayday Hospital, 17; St. Mary's Hospital, 11; domiciliary, 4. Triplets: Mayday Hospital, 1. The number of stillbirths which occurred among the 3,178 infants was ninety-two, including all premature, abnormal, and macerated foetuses: Mayday Hospital, 60; St. Mary's Hospital, 18; domiciliary, 14. The stillbirth rate for the Service is therefore 28.9 per 1,000 total births.

The numbers of maternal and foetal abnormalities and macerated foetuses associated with the ninety-two stillbirths are given in Table II.

In many instances more than one of the conditions were present in the same case. For instance, three hydrocephalic foetuses were macerated, as also was the foetus of the case of blackwater fever. (This case was reported in *Trans. roy. Soc. Trop. Med. Hyg.*, 1939, **32**, 743.) Other diseases associated with foetal maceration were toxaemia (six) and accidental haemorrhage (two). Shoulder presentations and prolapsed cords were associated in three cases, one of which had placenta praevia. Foetal abnormalities were present in seven out of the eight cases of hydramnios, anencephaly (two), anencephaly

TABLE II.—*Maternal and Foetal Abnormalities and Macerated Foetuses among Ninety-two Stillbirths*

| | Mayday Hospital | St. Mary's Hospital | Domiciliary Service | Total |
|---|---|---|---|---|
| Macerated .. .. .. | 16 | 6 | 6 | 28 |
| Anencephalic .. .. .. | 4 | 2 | 1 | 7 |
| Hydrocephalic .. .. | 4 | 3 | 3 | 10 |
| Achondroplasic .. .. | 1 | 1 | – | 2 |
| Spina bifida .. .. .. | 1 | 2 | – | 3 |
| Placenta praevia .. .. | 6 | – | – | 6 |
| Accidental haemorrhage .. | 4 | – | – | 4 |
| Toxaemia .. .. .. | 10 | 1 | – | 11 |
| Eclampsia .. .. .. | 3 | – | – | 3 |
| Hydramnios .. .. .. | 5 | 3 | – | 8 |
| Shoulder presentation .. | 6 | 1 | – | 7 |
| Prolapsed cord .. .. | 3 | 2 | – | 5 |
| Blackwater fever .. .. | 1 | – | – | 1 |
| Twin pregnancy .. .. | 3 | 1 | – | 4 |

TABLE III.—*Individual Weights and Maternal and/or Foetal Abnormalities*

| Case No. | Weight of Child | Maternal and/or Foetal Abnormality |
|---|---|---|
| | lb. oz. | |
| 1 | 2 13 | Acute hydramnios. Anencephaly |
| 2 | 4 10 | Acute hydramnios |
| 3 | 2 15 | Acute hydramnios. Anencephaly |
| 4 | 3 5 | Hydramnios. Hydrocephaly |
| 5 | 2 11 | Hydramnios. Anencephaly |
| 6 | 3 15 | Hydramnios. Spina bifida. Prolapsed cord |
| 7 | 5 3 | Placenta praevia. A.P.H. |
| 8 | 3 7 | „ „ „ |
| 9 | 3 13 | „ „ „ |
| 10 | 3 8 | Placenta praevia. Shoulder presentation with prolapsed cord |
| 11 | 5 4 | Accidental A.P.H. Pre-eclampsia |
| 12 | 4 9 | „ „ „ |
| 13 | 3 9 | Pre-eclampsia. Hydrocephaly. Macerated |
| 14 | 5 2 | Eclampsia |
| 15 | 2 4 | „ |
| 16 | 4 12 | Toxaemia. Macerated |
| 17 | 3 4 | Toxaemia. Placental infarction |
| 18 | 2 14 | Toxaemia. Macerated |
| 19 | 4 15 | Toxaemia |
| 20 | 2 14 | Toxaemia. Macerated |
| 21 | 5 2½ | Toxaemia |
| 22 | 5 1 | Blackwater fever. Macerated |
| 23 | 2 12 | Chronic nephritis. 7 previous stillbirths |
| 24 | 3 8 | Cardiac disease. First twin |
| 25 | 5 6 | Second twin |
| 26 | 3 9 | Breech. No cause ascertained |

and spina bifida (two), spina bifida (one), hydrocephaly (one), and achondroplasia and spinal deformity (one). Embryotomy (perforation) was performed in five cases: one was a Mayday Hospital booked case with a large hydrocephalus; one a St. Mary's Hospital booked case, brow presentation with a spinal deformity (seen in the *x*-ray film. This was the achondroplasic foetus); two emergency cases at Mayday Hospital, both "failed forceps before admission," one of which had a four-inch rectal tear and the other a three-inch tear in the vaginal vault on admission; and one an emergency eclampsia at Mayday Hospital, the foetus being dead on admission. Three stillbirths occurred in forceps deliveries, the indications for which were primary uterine inertia, occipito-posterior position, and contracted pelvis. Apart from the breech deliveries following internal version for shoulder presentation, five stillbirths occurred in breech labours, three of which had extended legs (one of these had a prolapsed cord), one was a contracted pelvis, and one was premature.

TABLE IV.—*Birth Weights and Associated Conditions among Thirty-eight Neo-natal Deaths*

| Case No. | Birth Weight | Associated Maternal and/or Foetal Condition |
|---|---|---|
| Mayday Hospital: | | |
| | lb. oz. | |
| 1 | 3 8 | Placenta praevia |
| 2 | 4 0 | „ „ |
| 3 | 5 14 | Placenta praevia. Atelectasis |
| 4 | 6 0 | „ „ „ |
| 5 | 2 0 | Accidental haemorrhage |
| 6 | 2 10 | „ „ |
| 7 | 3 6 | „ „ |
| 8 | 2 8 | Pre-eclampsia |
| 9 | 2 8 | Pre-eclampsia. Triplet |
| 10 | 4 7 | Pre-eclampsia |
| 11 | 2 5 | Eclampsia |
| 12 | 1 15 | Hydramnios |
| 13 | 4 7 | Exomphalos |
| 14 | 4 4 | Severe anaemia of pregnancy |
| 15 | 5 0 | Congenital heart disease |
| 16 | 2 8 | Cause of premature labour not known |
| 17 | 2 13 | „ „ „ „ „ |
| 18 | 3 12 | Atelectasis. Cause of labour not known |
| 19 | 4 10 | Cause of premature labour not known |
| 20 | 5 8 | Cerebral haemorrhage. Spontaneous delivery |
| 21 | 8 2 | Cerebral haemorrhage. "Failed forceps" B.A. |
| 22 | 3 9 | Cause of premature labour not known |
| 23 | 2 14 | „ „ „ „ „ |
| 24 | 6 2 | Toxaemia. Melaena and haematemesis |
| 25 | 7 2 | Acute gastro-enteritis |
| 26 | 7 6 | Cord infection. Liver abscesses |
| 27 | 7 14 | Atelectasis |
| St. Mary's Hospital: | | |
| 28 | Not stated | Placenta praevia |
| 29 | 3 3 | „ „ |
| 30 | 2 13 | Premature rupture of membranes |
| 31 | 2 14 | „ „ „ „ |
| 32 | 4 0 | Second twin |
| 33 | 5 3 | Second twin. Cardiac |
| 34 | 5 8 | Haemorrhage of newborn |
| 35 | 5 10 | Bronchopneumonia |
| 36 | 6 15 | Atelectasis |
| 37 | 7 8½ | Congenital heart disease |
| 38 | 8 6 | Cerebral haemorrhage. Forceps delivery |

One emergency case was admitted to Mayday Hospital with the baby's head already delivered by forceps but with the shoulders impacted. The baby was dead on admission.

Among the seventy-eight stillbirths which occurred in the two hospitals there were twenty-six premature foetuses, taking the weight of 5 lb. 8 oz. or less as the standard of prematurity. In every case except one abnormalities, foetal or maternal, or both, were found. The table of individual weights and maternal and/or foetal abnormalities (Table III) makes interesting reading.

The infant deaths which occurred among the 3,086 live births numbered forty-three: Mayday Hospital, twenty-seven; St. Mary's Hospital, eleven; domiciliary, five. The infant death rate for the Service is therefore 13.9 per 1,000 live births.

Among the thirty-eight neo-natal deaths which occurred in the two hospitals there were twenty-six premature infants. As in the case of the stillbirths, maternal and/or foetal abnormalities were present in many instances. The birth weights and associated conditions are set out in Table IV.

### Summary and Comments

A series is recorded of 3,144 consecutive deliveries without a maternal death due to pregnancy. The stillbirth rate for the series is 28.9 per 1,000 total births. The infant death rate for the series is 13.9 per 1,000 live births.

A description of the Croydon County Borough Obstetric Service is given, with reference to personnel, hospital accommodation, clinics, and routine ante-natal supervision.

Tables are given showing the major abnormalities treated, and the maternal and/or foetal abnormalities associated with the stillbirths and infant deaths.

It will be seen from the tables that the lower segment operation has been the operation of choice for Caesarean section (66 per cent.). Reference is also made to the use of spinal anaesthesia in fifty-nine out of the seventy-four Caesarean sections (80 per cent.), and to its particular suitability for the lower segment operation.

The number of booked patients admitted to hospital with toxaemia, including all cases of hypertension and/or albuminuria, was 363—that is, 12 per cent. of the total of 3,015 booked patients. No cases of eclampsia occurred among these patients. In the four emergency cases of eclampsia three babies were stillborn and one died.

Reference has been made to the care taken to ensure the fullest co-operation between the Service and the practitioners, which must be one of the greatest essentials in bringing the maternal mortality figures to the irreducible minimum. It must be agreed that such co-operation has been attained to a very gratifying degree in the period covered by the series reported, the successful outcome of which is due in no small measure to the foresight of the practitioners who sent their cases to us in time to institute proper treatment. This is true not only of the greater proportion of emergencies but also of many of the booked patients, who were sent to the clinics on account of abnormalities which their doctors thought should be treated in hospital, and whose supervision we gladly undertook.

In view of the great interest which the scientific world has shown in the plight of the refugees from Germany and Central Europe, so many of whom are the wives or children of scientific workers, attention may be drawn to a pamphlet published by the Welfare Department of the Central Office for Refugees, Bloomsbury House, Bloomsbury Street, London, W.C.1. The pamphlet is entitled "Entertaining our Refugee Guests," and reveals a great need for personal help for many of the victims of persecution.

## ON SOME SEASONAL CHANGES IN THE PITUITARY GLAND OF THE EEL

BY

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In January, 1937, the Zoological Society of London published in its *Proceedings* a note on some seasonal changes in the pituitary gland of the eel (*Anguilla vulgaris*); these observations were put on record because they appeared to be of some biological significance in relation to the sexual changes that take place in the period just previous to the migration of the eel. This communication records the results of monthly observations of the pituitary body of the eel over a period of three years, and includes the findings of three series of specimens taken from fish caught between May and October: during the later two months more than one specimen was examined. The conclusions reached from these prolonged observations confirmed the results of the first series—namely, that there was a great increase in size of both anterior and posterior lobes in the last two months before the migration commenced, and that there was a remarkable activity of the cells of the posterior lobe and a pronounced change in the type of cell in the anterior lobe. Through the kindness of the late Professor Woollard, and latterly of Dr. Amoroso, I was allowed to avail myself of the services of his expert technician, Mr. Hancock, and at Lowestoft I was also helped (through the courtesy of the Ministry of Agriculture and Fisheries) in the preparation of material for study by Mr. Clarke, the chief laboratory assistant.

For descriptive purposes I propose to use the terms employed in Sharpey-Schafer's *Histology* (1920), and to speak of the pars anterior, and the pars posterior, which in fish consists of pars intermedia and pars nervosa. In that textbook there is a good illustration of a sagittal section of the base of the brain and pituitary body of the cat. If we omit the pars tuberalis, this section is very similar to a section of the eel's pituitary: the pars intermedia is less vascular than the pars anterior, but more so than the pars nervosa, around which it extends in the cat; this is still more so in the eel, in which the pars nervosa dips down into pockets of a large glandular pars intermedia. This consists of a number of acini the peripheral part of which is composed of four layers, more or less, of cubical cells; and, separated from them by a homogeneous substance, there is a central layer of ependyma cells surrounding the neuroglia of the pars nervosa. In the active state a very different picture is seen. The peripheral cells are almost entirely replaced by a yellow-staining granular secretion. Many empty ovoid cells are present, and frequently the granular secretion is replaced by masses of refractile brown colloid. Surrounding each alveolus is a meshwork of fine capillaries, and within them are small masses of brown colloid together with a few blood corpuscles. The blood vessels supplying this meshwork come from small peripheral arteries which can be traced inwards to form an anastomosis into which the capillaries enter. The blood from the acini is collected by small veins that group themselves into three areas from which a large vessel proceeds. These three vessels unite to form a single trunk opposite the infundibulum, and this passes caudally to enter the lobus infundibuli.

The evidence as to the direction of the circulation in this system is as follows. We have observed in the course of the branching nerve fibres entering the pockets of the pars intermedia small globules of colloid that are homogeneous and refractile, and we have also noted vessels running parallel to them from which these globules have presumably escaped. Popa and Fielding (1933) have described similar colloid globules in the hypophysio-portal vessels of the mammalian pituitary, and they state that "the direction in which the blood flows may be gauged by their colloid accompaniment. As colloid (whatever it

may be) is formed in the pituitary and not in the brain, its association with vessels may be taken as indicating that the direction of the flow is certainly hypophysio-hypothalamic. Sometimes the colloid globules occur in the lumen of the vessels and sometimes in the intervascular tissue of the neural portion of the stalk." It is therefore important to note that in our sections the globules occur within the perivascular sheath at the point of junction of the capillaries described above and in the lumen of the large central vessel which runs backwards to the base of the lobus infundibuli. Our very definite observation, in a large number of sections, of the colloid material within the enclosing capillaries of the acini seems of some importance, as De Beer speaks of the probability that products of the pituitary other than those of the anterior lobe may be blood-borne.

### The Anterior Lobe

Compared with the posterior lobe the anterior is very vascular. It consists of groups and columns of epithelial cells with dilated sinusoids. The cells are either chromophil or chromophobe: the former are either acidophil or basophil. The acidophil cells are granular and spherical, and stain pink with eosin, while the basophil cells stain with haematoxylin and are larger than the eosin-staining cells, though their granules are smaller. The sinusoids vary very much in size, and in that part of the anterior lobe which faces the infundibulum there is a wide depression occupied by what appears to be stringy secretion, and deep sinusoidal pits dip down into the epithelial portion of the gland. Anterior to the infundibulum the neural stalk descends from the anterior margin of its wall. In the midst of the secretion above mentioned there are numerous refractile globules similar to those described above, and in two consecutive sections we counted twenty of varying sizes, while between the hilus of the gland and the entrance to the infundibular cavity we have been fortunate enough to cut in a longitudinal direction a small vessel containing a row of globules like a string of beads, and around it were many scattered globules lying free. This vessel communicates with those of the pia mater clothing the ventral margin of the lobus infundibuli, and from these vessels ascending branches supply the tissues of the neural stalk. Refractile globules are found in the stalk, free in the infundibulum and in the surrounding tissues. Having attempted to give a short account of the anatomy of the pituitary gland in the eel, it will be necessary to review some established facts relating to the general physiology of the organ. Professor Hogben (1927) refers to the part played by the secretion of the pituitary gland in determining the normal rhythm of colour change in amphibia. He points out that the pituitary is a specifically vertebrate structure from which no active substance has as yet been isolated in a pure form. Extracts of the pituitary of mammals, birds, reptiles, and fishes (teleostean and elasmobranch) have a powerful excitatory effect on the mammalian uterus. Extracts of the pituitary of all classes of Amniota, Amphibia, and Teleostei exert a pressure-diuretic action on the mammal. In fact, the posterior lobe of the mammal, while a storehouse of probably several substances of very great activity, has not yet been conclusively proved to have any functional significance. There is, on the other hand, the clearest evidence for regarding pituitary secretion as the main factor in co-ordinating the pigmentary responses of amphibia to the changing conditions of their environment.

In writing on the anterior pituitary in the last edition of Evans's *Recent Advances in Physiology*, Newton (1936) states:

> "In spite of only three types of cell being present in the anterior pituitary gland—basophil, eosinophil, and chromophobe—there seems no escape from the evidence which pointed to it as the birthplace of a phenomenal number of hormones. These act on the general bodily growth, carbohydrate metabolism, the gonads, the thyroid, etc." In connexion with our present subject it is obvious that its effect on the mammary gland need not be considered. "The hormones are known so far only by their effects, but in the case of many of them extracts have been obtained which exhibit one type of activity to the exclusion of the others and which nullify the corresponding effect of hypophysectomy."

The growth hormone and the gonadotrophic hormone interest us most in our discussion of the appearances of the anterior pituitary of the eel in the spring, summer, and autumn months; but the effect of the thyroid may also be discussed. It may be stated now, in reference to the seasonal changes, that in the early months—May, June, July, and August—the gland is much smaller than in September and October, when there is a great increase in size. There is a slight variation in different years as to the time at which migration starts, and there is a corresponding variation in the histological picture. In one year migration continued until November, and in another only till September. We have found that, as above described, the posterior lobe becomes distended with secretion, and that brown colloid masses are found in the alveoli and also in the capillaries. The changes in the anterior lobe are equally striking. It becomes more vascular, the sinusoids are distended, and there is a very striking increase in the eosinophil cells. Before reviewing the bearing of the above facts on the seasonal changes I will give a short account of the changes in external characteristics of the eel during the months preceding the journey to its Atlantic breeding-place.

### Changes in the Eel

We are all familiar with the life history of the eel and the epoch-making researches of J. Schmidt, but it may be wise to recall the changes that occur in the make-up of the eel from the time it ceases to be an elver until the time it disappears into the depths of the Atlantic.

In the first year of its freshwater existence, as it gradually assumes the characteristics of the "yellow eel," there is a diminution in size, just as there is when the leptocephalus becomes an elver. After a number of years spent in fresh water—rivers, estuaries, or lagoons—the dorsal surface changes its colour from greenish yellow to nearly black, the sides come to look like a freshly coined penny with metallic reflections, while the belly becomes silver-white and the eyes appear to increase greatly in size. It is now known as the "silver eel," and, having put on its wedding garment, it is ready for migration; the sexual organs begin to develop, but they do not attain full development until the fish has entered the sea. Other changes are noted. To quote Tate Regan (1911): "The snout is less flattened, the body is more rounded, plumper, and firmer to the touch; the pectoral fins are longer, more pointed, and blackish in colour." Internally, the digestive tract is shrunken, as they cease to feed; the fish loses its muddy flavour, and its firm white flesh makes it more fit for the table.

From the physiologist's point of view three changes have taken place: (i) colour changes due to expansion and contraction of melanophores and xanthophores; (ii) eye changes, which may perhaps be regarded as an exophthalmic condition due to a thyrotrophic stimulation; and (iii) development of the sexual organs due to a gonadotrophic stimulation. No doubt there are other profound metabolic changes, which I shall refer to later.

### The Problem of Migration

The significance of the above observations and their bearing on the more recent views on the problem of migration can now be discussed. Professor F. H. A. Marshall, in his preface to Walter Heape's *Migration, Emigration, and Nomadism* (1931), mentions that Heape suggested that the immediate stimulus for a breeding migration came from a periodic increase of the internal secretion elaborated by the gonads. Mr. John Hammond in 1925 explained his own observations on growth and reproduction by assuming that the anterior pituitary

hormone is responsible at different times for stimulating both these processes, its physiological effect being transferred from one function to the other, in the process of individual life. Heape was very definite in his view that the impulse to migrate is induced by changes in the functional activity of certain organs included in the reproductive system, "the details of which must be left in the hands of the student of the physiology of the reproductive system." Reading Heape's work carefully, however, leaves us with the impression that he recognized the switching off of the endocrines from a growth-producing function to a gonadotrophic function; but the work of Parkes and others, which has thrown so much light on the gonadotrophic function of the anterior lobe of the pituitary, had not then been published. Referring to the eel Heape says: "Comparison with a great variety of other animals, and especially fishes, induces me to hold a strong opinion that the development of the reproductive glands is due to a switching off of energy which was previously engaged in the metabolic processes which result in growth."

Our earliest knowledge of the functions of the pituitary gland were connected with growth in certain pathological conditions; and it is now known that in mammals the anterior lobe secretes a growth hormone, which produces, if in excess, gigantism in children, and in adults acromegaly. Extracts of the pars distalis cause growth to take place, when it has ceased as the result of the removal of the pituitary. It is interesting to note the condition somewhat analogous to gigantism in those eels that have been prevented from making the gametic migration. To quote Roule (1933):

> "Not all eels set out on this hazardous journey. Some at the period of puberty cannot, from the nature of the locality, leave the lake or pool in which they are too closely imprisoned. Like the sterile trout of the deep lakes, and for the same reason, their ovaries—for these eels are usually females—change and atrophy; rendered sterile, the eels grow fat and larger. Eunuch eels of this sort have been kept in captivity for twenty or thirty years."

We are continuing our monthly observations on the eel during the present season, and hope to have the opportunity of obtaining a "eunuch eel" in order to note the differences, if any, in the histology of the anterior lobe. We have already noted the colour changes, and suggested that they may be the result of the activity of the posterior lobe; we submit that the eye changes may be due to the action of an anterior pituitary hormone on the thyroid gland. Tate Regan has described how, during thunder, eels become restless and active. It is only on certain dark nights that eels run. In Norfolk it is the custom for eel-catchers to keep a few silver eels in a perforated trunk in the water; and they do not put down their eel-setts unless these eels become restless, which is a signal that the other eels are running and that the night is favourable for a good catch. We have described elsewhere the presence of two lateral ganglia which pass to the pituitary in fish from the ventrolateral margins of the lobus infundibuli; these are connected, by descending fibres from the nucleus rotundus, with the co-ordinating centre of sensory impressions in the dorsal part of the lobi inferiores. We can thus visualize a means by which the pituitary gland may be controlled by external conditions.

The above observations must be looked upon as a preliminary note on a biological experiment which can be conducted under perfectly natural conditions and could be very widely extended. The significance of the refractile globules described requires further research, and there seems to be every possibility that we shall be able to confirm the presence of a hypophysio-portal circulation in fish, such as has been described by Popa and Fielding in higher vertebrates.

## Conclusions

In an attempt to gauge the biological significance of this investigation we must briefly refer to the present state of our knowledge of the function of the pituitary. Since Pierre Marie noted in the 'eighties that acromegaly was associated with tumours of this gland much clinical evidence has accumulated. In man and the higher vertebrates abnormalities of the pituitary may be the cause of unusual growth and sexual development. Extracts of the posterior lobe of the pituitary are well known and are in constant clinical use, but we are not certain as to the exact functional significance of the posterior pituitary in the normal body. Professor Hogben and others have proved that colour changes in amphibia are under the control of the posterior lobe, which contains a "specific stimulant which will induce contracted melanophores to undergo maximum expansion." In fact, there is clear evidence that the pituitary may regulate colour changes in vertebrates. It is probable, therefore, that the pigmentary changes in the eel that occur previous to the onset of migration are produced by the secretion of the posterior lobe, which, as we have seen, is increased and modified at this period. It is known that a growth hormone is present in the anterior pituitary, because pituitary-less tadpoles, when reared, show arrested development of the thyroid and fail to undergo metamorphosis: pituitary grafting accelerates growth and metamorphosis in normal tadpoles. These and other facts point to the conclusion that the anterior lobe controls the activity of the thyroid, and we can infer that it is also associated with growth control. The enlargement of the eel's anterior pituitary and the other changes that occur at approaching puberty may produce excessive thyroid activity, and this hyperthyroidism may be the cause of the prominence of the eyes and apparent enlargement noted in the silver eel.

Before the gonads develop in the eel, or at any rate in the very early stages of their development, there is a great increase in size of the anterior lobe and also in the number of acidophil cells. The gonadotrophic hormone of the anterior pituitary is well known, because hypophysectomy causes gonads to lose weight and the accessory organs to atrophy. Implantation of anterior pituitary substance and injection of suitable extracts before puberty, cause precocious sexual maturity, and since both ovary and testis responded to pituitary hormones before puberty it is assumed that the hypophysis has not yet begun to secrete a sufficient amount to produce its effect. The anterior pituitary is increased in size in nearly all species during pregnancy; so that we feel there is enough evidence to associate the above-mentioned conditions with the beginning of gonad development in the eel. If for any physical conditions an eel that is ready to migrate is restrained from going on its journey, it may grow and become of an immense size, and live in captivity for many years; this suggests the analogous gigantism of a eunuch, and it may be that the gonadotrophic hormone is replaced by the growth hormone, which, we have seen, is also present in the anterior lobe in these conditions.

In conclusion I may add that it is shown that in the teleostean thalamus a lateral ganglion on each side of the infundibulum is connected with the pituitary gland and also with the centre for co-ordinating the impulses from the organs of special sense; it is therefore quite easy to explain how the effect of dark nights and thundery weather can be the final urge that starts the migration.

I wish to express my indebtedness to the University of London for a grant which has enabled me to carry on this research.

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# THE OPERATIVE TREATMENT OF INGUINAL HERNIA

## RESULTS OBTAINED IN ADULT MALES BY THE FASCIAL SUTURE TECHNIQUE

BY

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The short paper by A. Simpson-Smith (1939) should help to disturb the all-too-complacent attitude towards the results of operations for the radical cure of hernia. The recurrence rates which he quotes make it quite clear that the results generally obtained leave much to be desired. The limitations of the usual methods of hernial repair have long been recognized in this clinic, and for some years past the fascial suture technique has been employed in an effort to produce better results.

Two years ago we attempted to find out what improvements had been gained by the fascial suture operation. Unfortunately the social condition of our patients makes follow-up investigations very difficult, and we were able to trace only fifty out of a total of approximately 200. At that time this seemed too small a series to publish; but since the question of recurrence rates is now often raised it may be of value to state the results obtained. Since four of the fifty patients had bilateral lesions we have information about fifty-four hernias. Of these, twenty-nine were oblique, ten were direct, and in eleven the type was not stated in the records. The remaining four cases had already recurred after operation elsewhere. The average period which had elapsed between operation and the date of the investigation was three years, so that a fair opportunity was given for recurrences to appear. The ages of the patients ranged from 18 to 66 years, with the following distribution:

| −20 years | 20–30 years | 30–40 years | 40–50 years | 50–60 years | 60+ years |
|---|---|---|---|---|---|
| 1 | 3 | 15 | 12 | 15 | 4 |

*Technique.*—The main points of the technique used in this series are: the sac was not cut away after being separated, but was stitched and pulled up under the internal oblique muscle after Macewen's method; the fascial suture was derived from the aponeurosis of the external oblique and was inserted in *front* of the cord. The conjoined tendon was not utilized as it is often of poor development and little strength. Instead the fascial stitches passed from Poupart's ligament to the edge of the sheath of the rectus abdominis *without tension.*

### Results

It is fair to say that the efficiency of a hernial repair is severely tested by the type of patient we treat in this hospital. In the first place our patients age prematurely, so that, generally speaking, the reparative powers of the tissues of a man of 40 to 50 years are approximately equal to those of a man of 50 to 60 years in better social and financial circumstances. Secondly, chronic bronchitis is common and is regarded almost as normal in patients over 40 years. Lastly, many of our patients have heavy manual employment, such as that of general labourers, ships' firemen, and dock workers. The investigation revealed that in the fifty-four repairs there were four recurrences, giving a rate of 7.4 per cent. The details of the recurrent cases are as follows:

*Case 1.*—Aged 42. The original hernia was oblique and on the right side. At the time of operation chronic bronchitis was present. The rupture occurred twelve months after operation, and when examined three years after operation was a mere bubonocele. In the interim a left-sided hernia had developed. Cough was so severe that further operation was not advised.

*Case 2.*—Aged 38. The original hernia was on the left side, but the type was not stated. Moderately severe chronic bronchitis was present. The patient was not sure when the rupture recurred, but thought it probably came back about a year after operation.

*Case 3.*—Aged 52. The original hernia was on the right side and was direct. It recurred six months after operation. A note made at the time of operation states: "Abdominal wall very poor. Repair not satisfactory."

*Case 4.*—Aged 48. The original hernia was on the right side, but the type was not recorded. It recurred after seven months. The patient's work was moderately heavy.

### Commentary

Twenty-five of the operations were done by Mr. J. E. Paterscn, consulting surgeon, with but one recurrence (Case 1, described above). The rest were performed by registrars, all of whom were beginning their operative experience. Spinal anaesthesia (0.1 gramme planocaine) was used almost exclusively in this series. This is an important point, as it prevents the strain of post-anaesthetic vomiting. The damage that retching can cause was vividly demonstrated to me recently when a neurotic patient was undergoing a hernial repair under spinal anaesthesia. Just when the fascial suture had been inserted the patient began to retch. A tearing noise was heard, and examination showed that the strain had torn a long strip completely away from Poupart's ligament and the repair was rendered useless.

Two of the recurrences may fairly be ascribed to the strain of chronic coughing and not to any defect in technique. Case 3 was unsuitable for this type of operation. A more secure repair could have been made with long fascial sutures obtained from the fascia lata.

It was discovered that when a hernia did recur it ran alongside the cord and appeared at the side of the original external ring. Because of this the technique has been modified. The fascial suture is now inserted *behind* the cord. Great care is taken to insert the first stitch so that no gap is left at the angle between the edge of the rectus sheath and the pubic crest. In cases where Poupart's ligament is lax and poorly developed the first stitches are passed through Cooper's ligament instead.

### Summary

A small series of fifty-four cases of inguinal hernia treated by fascial suture is described.

The recurrence rate is 7.4 per cept.

Very little selection of cases for operation was carried out. Thus moderately severe chronic bronchitis was not in itself considered a contraindication; no distinction was made between direct and oblique types, and hernias which had already recurred were not excluded. In short, if there was a reasonable chance of curing the hernia without endangering the patient's life operation was performed.

Considering the clinical material the results are gratifying, but an improvement is expected from the modified technique.

This investigation was carried out at the suggestion of Mr. J. E. Paterson, to whom I am indebted for his stimulating interest in all my work. I must also thank Dr. W. Martin, superintendent, for permission to publish this paper and for his frequent words of encouragement.

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# INCOMPLETE FRACTURE OF FEMORAL NECK IN A CASE OF INFANTILE COXA VARA

BY

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This case is reported because I am unaware of any previous record of the condition.

## Case Report

The patient, a widow aged 76, had enjoyed excellent health and had never previously noticed any abnormality of the limbs. Eighteen days before examination she was seized with sudden severe pain down the front of the left thigh while going up a step. She did not fall, but had much difficulty in getting upstairs to bed, where she remained for two or three days while the pain was severe. The pain then began to subside gradually, and she got about again. On the advice of her doctor she persisted in using the limb, although it felt weak and standing on it and walking were very painful.

The patient was of healthy appearance and slight build. The left lower limb was held rotated outwards, but could be brought into the neutral position. Movements were almost painless, but they were limited, particularly abduction and adduction. The limb showed shortening of two inches above the great trochanter. A diagnosis of impacted transcervical fracture of the left femur, adduction type, was made.

FIG. 1.—Skiagram of left hip taken eighteen days after the onset of symptoms (antero-posterior view).

Skiagrams showed old-standing left cervical coxa vara. A fissure having the characteristics of a fracture extended through the upper three-quarters or so of the middle of the femoral neck (Fig. 1). The upper end of the right femur showed no abnormality. The diagnosis was now changed to incomplete transcervical fracture complicating left-sided infantile coxa vara.

The patient was kept sitting in bed, with 5 lb. traction applied through a Thomas splint and strapping, for six and a half weeks. The splint and traction were then removed and bed exercises were started. She walked with the aid of a stick at the end of twelve weeks, and left hospital after a stay of thirteen and a half weeks. The range of movement

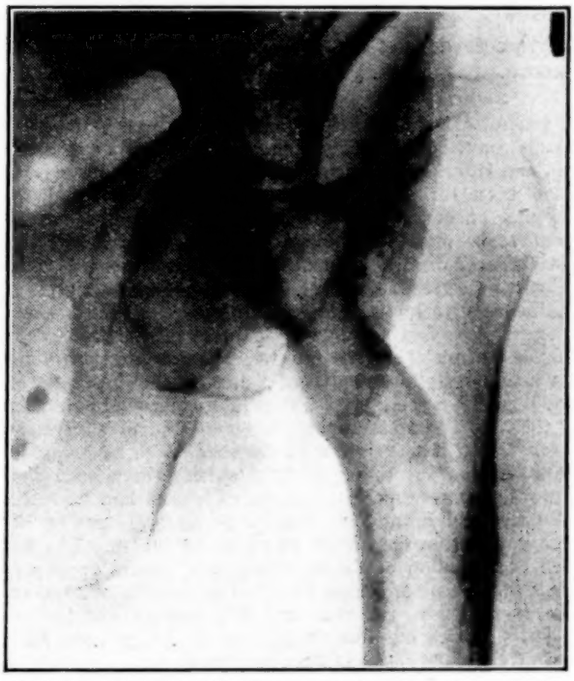

FIG. 2.—Skiagram taken twenty months after the onset of symptoms

at the left hip was then: flexion, about 80 degrees; extension, almost full; abduction, *nil*; internal and external rotation, half the normal range.

Skiagrams taken at intervals during treatment showed progressive filling of the gap. Twenty months after the onset of symptoms the movements in the hip were of about the same range as at the time of discharge, except that 20 degrees of abduction had become possible. The hip was painless. A skiagram showed no further change (Fig. 2).

## Discussion

The points of interest are: (1) The absolute clinical resemblance, except perhaps for the amount of shortening, to an impacted fracture of the normal femoral neck. Even the characteristic external rotation deformity was present. (2) The skiagram showed without any doubt that the coxa vara was of the infantile type and was not the result of the fracture or of recent osteoporosis. (3) That cervical coxa vara of seventy-six years' duration should have given no trouble demanding the patient's attention. (4) That the partial breach in the bony continuity of the femoral neck was not due to the fibrous intersection so often seen in cases of infantile coxa vara. This is proved by (*a*) the history; (*b*) the appearances in the first skiagram, which are unmistakably those of fracture, as evidenced by the well-defined, regular, and congruous margins of the fissure; and (*c*) the subsequent radiographic evidence of bony union.

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The Albert Merrit-Billings Hospital at Chicago has been left two million dollars by Mr. O. C. Wells for medical instruction and research. Mr. Wells has also bequeathed 50,000 dollars to the Presbyterian Hospital for urological investigations.

# Clinical Memoranda

## Rupture of Ventricle

It appears to us that the following two cases are worthy of record.

CASE I

A general labourer aged 58 had been a patient in mental hospitals for the past twenty-nine years suffering from chronic mania and latterly from secondary dementia. Before his death he had been for some years in a state of remission from pernicious anaemia, first diagnosed in 1929, but probably present in a mild form since 1924, and for which until about three years ago he had had regular doses of various liver extracts. He was the subject of advanced arteriosclerosis with thickened tortuous peripheral arteries and enlargement of the heart. The first evidence of a heart lesion was noted in 1928, when a mitral systolic murmur was detected. At various times aortic systolic and diastolic and mitral presystolic and systolic murmurs had been noted in the heart, but of these only the apical systolic appears to have been of a permanent nature. When last examined in October, 1939, he had a loud systolic murmur at the apex of the heart conducted in all directions. At no time in his previous history had he suffered from precordial or anginal pain or from symptoms of heart failure apart from occasional shortness of breath. The widespread degeneration of the cardiovascular system appeared to be well compensated, for he remained in good health and quite active to the last. He had been a parole patient for some two years, occupying himself in one of the gardens on the estate. The Kahn test had been negative.

On November 3 last he seemed to be in his normal health at midday and ate a good dinner. At 2.30 p.m. he was seen cheerfully making his way to his work, but at 2.45 p.m. he was found lying on his back very pale and quite dead.

At necropsy there were no abnormal external appearances on the body, which was well nourished. On opening the chest the pericardial sac was seen to be enormously distended with blood, most of which had clotted. There was more than two pints of blood present. The heart was large and pear-shaped and weighed 21 oz. The ventricles were hard and contracted in systole. The heart muscle was hypertrophied, especially in the left ventricle. On the sterno-costal surface of the latter about an inch above the apex near the septum a jagged rent one inch long could be seen through which the bleeding had presumably taken place. The index finger easily entered this wound, which passed through the wall into the left ventricle. On opening the affected ventricle it could now be seen that the internal length of the wound was roughly one-half of that of the external wound. The left ventricular wall was uniformly thickened to two inches except at the site of the rupture, where it was less than one-quarter of an inch over an area corresponding to the size of about half a crown. This thin area was paler than the surrounding muscle and was obviously fibrosed, with little remaining muscle tissue. There was no sign of fatty infiltration or degeneration in any part of the heart. Aneurysmal dilatation was not present and no antemortem blood clot could be seen. The coronary arteries were patent, but showed advanced patchy atheroma with calcification. Similar degenerative changes could be seen on the aorta and aortic valves. The rest of the heart was apparently healthy. Other evidences of arterial degeneration were found in the kidneys and in the arteries at the base of the brain.

CASE II

A similar case occurred previously at this hospital. In December, 1930, a patient who was known to be the subject of generalized arteriosclerosis and high blood pressure, and who otherwise appeared in good health and quite active, fell down while washing himself and died immediately. Here, too, the Kahn test had been negative.

At necropsy the pericardial sac was found to be distended with blood clot and the heart muscle mottled and infiltrated with fat. A tear two and a half inches long could be seen in the wall of the left ventricle near the apex, close to the septum. The wall of the ventricle in this region was considerably thinner than the surrounding muscle, with much old blood clot on its endocardial surface.

The outstanding features appear to be that (1) incapacitating symptoms and even pain had been absent in life; (2) a different cause was in operation in each case; and (3) death was instantaneous. The rarity of the condition is borne out by the fact that the cases described above are the only two recorded in over 1,400 post-mortem examinations carried out at this hospital.

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Acting Medical Superintendent.
R. W. MAXWELL, M.B., B.S., D.P.M.,
Assistant Medical Officer.
Northampton County Mental Hospital.

## Perforation of a Duodenal Ulcer into the Aorta

The following interesting case appears to be worth placing on record.

CASE REPORT

A woman aged 49 was admitted to hospital on December 21, 1939, with the following history. After returning home from work that day she vomited a small quantity of dark red blood. Six days previously she had had a similar attack. For two or three years she had complained of epigastric pain occurring about two or three hours after meals, which was relieved by food. The pain had become more severe recently, and she was losing weight. She continued to work as a weaver, and had not obtained medical advice.

On admission she was pale and thin, and appeared anxious. The pulse was 120 and of good volume. There was definite epigastric tenderness. She settled down, the pulse rate decreased, and there were no further signs of haemorrhage. Witts diet and alkaline powders were given and considerable improvement followed. A blood examination on December 28 showed haemoglobin 63 per cent. and a colour index of 0.85. A barium meal on January 9 demonstrated a filling defect low down in the duodenum. On January 25 the patient was sitting up in bed knitting when she collapsed suddenly, became unconscious and pulseless, and died within ten minutes.

The post-mortem findings were as follows: The abdomen was slightly distended; there was no free fluid. The stomach and intestine were distended and, when opened, were full of blood, fluid and bright red, which extended up into the oesophagus and mouth. The stomach wall was normal. The third part of the duodenum was firmly adherent to the abdominal aorta. The duodenum and part of the aorta were removed together. An ulcer about one inch in diameter, with marked induration of the base, was present on the posterior wall of the third part of the duodenum. There was a small perforation through the floor of the ulcer into the aorta. The aorta was empty of blood, and there was no evidence of pronounced atheromatous degeneration. The post-mortem appearance of the other organs was consistent with death from haemorrhage.

This case is of interest for the following reasons: (1) the unusual site of the ulcer in the third part of the duodenum; (2) the rarity of perforation of an ulcer into the aorta; and (3) the fact that there were two attacks of haematemesis, which were presumably due to erosion of a vessel in the floor of the ulcer, before the major haemorrhage which caused death.

I wish to thank Dr. J. W. M. Alexander for allowing me to perform the post-mortem examination and for permission to publish this case.

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Resident Medical Officer, Keighley and District Victoria Hospital.

# Reviews

## TUBERCULOSIS OF BONE AND JOINT

*Tuberculosis of Bone and Joint.* By G. R. Girdlestone, M.A., B.M., F.R.C.S. Oxford Medical Publications. (Pp. 266. 30s. net.) London: Humphrey Milford. 1940.

This important work merits the closest examination and study, because it is written by a surgeon who has had a very wide experience in the treatment of this intractable disease. The author and publishers are to be congratulated on the excellence of the book, and on the clarity with which the many illustrations and *x*-ray photographs have been reproduced. The first few chapters are devoted to general considerations and are written lucidly and with authority, and give the reader very sensible and definite lines to follow in this important part of treatment of the general disease. Each section is preceded by a discussion on differential diagnosis which is full, clear, and complete, leaving little or no doubt as to the scrupulous care with which the author decides on the cause of any chronic joint disease. His insistence on the classification of patients into separate age groups is to be commended, and his statement that the period of treatment and the prognosis vary widely between the child and the adult is a fact of fundamental importance. Equally important is his insistence on the need for a complete after-care and follow-up system, and he wisely states that unless a patient is followed for at least five years after release from hospital care no statistical value can be placed on any record of that patient's stay in hospital. Graphs of the relative frequency with which the disease affects the different joints are carefully prepared, and are of much value.

While the general plan and foundation of the book are excellent, there are certain strange omissions from such a complete description of the disease and its treatment, and certain methods of treatment are advocated which at present are not generally accepted among orthopaedic surgeons. Mr. Girdlestone stresses very strongly his firm belief in the value of open air and sunshine, especially the former, and he believes quite justifiably that exposure of the body, and even of the affected area, to these influences is of considerable therapeutic value. This belief would seem to be lightly held when he advocates as the best of all forms of treatment for tuberculous arthritis of the knee-joint a plaster spica including the pelvis and foot. It seems peculiar that one who has had "a happy apprenticeship with Sir Robert Jones" should not mention the use of the Thomas bed knee splint in this connexion. In his description of the treatment of tuberculosis of the sacro-iliac joint Mr. Girdlestone is rather indefinite about the time which he would consider to be a "sufficient period for conservative treatment," but one is left with the impression that in his mind this period should be short and that operative treatment holds out the chief hope of recovery. In regard to the treatment of paraplegia following Pott's disease Mr. Girdlestone has certainly left the paths which are trodden by most other authorities. He is an out-and-out exponent of treatment by operation, either laminectomy or costo-transversectomy. To operation in this disease he pays no mere lip service, and in this connexion, and in the case of Pott's disease generally, there is perhaps too much attention paid to operation and its technique, stressing unnecessarily a single, though important, part of the treatment of tuberculous joint infection.

The book will do good; it will bring to the notice of the profession the views held by an authority who is generally recognized as having weight in the surgical world; and it should stimulate further thought among those who are dissatisfied with the results obtained by their own methods of treatment.

## PIONEER WORK IN EMBRYOLOGY

*The Rise of Embryology.* By Arthur William Meyer, Emeritus Professor of Anatomy, Stanford University. (Pp. 368. 6 dollars.) California: Stanford University Press; London: Oxford University Press.

This book contains much historical matter that is curious and interesting. It is not easy for modern research workers, who are provided with first-class textbooks, access to libraries, and the latest technical equipment in the nature of embedding apparatus, microtomes, and modern microscopes, to realize the almost insuperable difficulties the pioneer workers in embryology had to contend with in order to work out bit by bit the accumulated knowledge which is now the common heritage of students of to-day. Professor Meyer's book helps the reader to grasp what these difficulties are, and how, one by one, they were overcome by careful observation and sound deductions, in face of the fanciful speculation and false traditions that were current in the early days of medical science. The reader will also be impressed by the wide general knowledge of some of the earlier workers, who are comparable with those now known as "field naturalists"; the early workers, by personal observations on all kinds of animal and plant life, were often much in advance of some modern writers whose knowledge is largely acquired by the study of well-illustrated textbooks, and is sometimes limited to casual inspection of caged animals in zoological gardens and non-living museum preparations. One example of the difficulties which hampered the older naturalists before the development and perfection of the compound microscope was the small size of the ovum of mammals and the confusion which arose from the failure to distinguish between the ripe Graafian follicle, the corpus luteum, and the ovum contained within the follicle, it being argued that the "ovum" was too large to traverse the narrow lumen of the Fallopian tube. Step by step, to the credit of the combined efforts of many astute observers, who recorded their original observations and deductions, the whole story as we know it of reproduction and ontogeny has been gradually built up by careful sifting of the evidence, and records accompanied by accurate drawings, and photomicrographs, supplemented by serial reconstructions and the results of experimental embryology.

A special feature of Professor Meyer's history is the illustrations, which include excellent reproductions of the original drawings of Malpighi, Wolff, Franz Bauer, and those made for John Hunter; also portraits of the older classical writers such as Aristotle and Hippocrates, and of more recent contributors to the science of embryology, such as von Baer, Leeuwenhoek, and Fabricius who stimulated the work of Harvey. Another special feature of this book is the excellent bibliography, which gives references not only to the principal classical writers on the subject but also to translations of these works into the English language.

*The Rise of Embryology* is a scholarly work. It should inspire enthusiastic admiration for the sterling qualities which enabled the early seekers after truth to combat the fanciful notions which existed in those days and so much

delayed the progress of this science; and it should also serve as a warning to present-day research workers to distinguish sharply between deductions based upon observed facts and opinions founded upon hypotheses.

## ADVANCES IN NEUROLOGY

*Recent Advances in Neurology.* By W. Russell Brain, D.M., F.R.C.P. Fourth edition. (Pp. 364; 24 illustrations. 15s. net.) London: J. and A. Churchill. 1940.

The latest edition of this book is the work of Dr. Russell Brain alone, as Dr. E. D. Strauss has deserted the field of neurology for that of psychological medicine. It amply fulfils the high standard of this series. It has been largely rewritten and contains seven new chapters. The section on headache contains much new matter, and that on electro-encephalography deals with a technique which has been developed almost entirely since the third edition appeared in 1934, the year in which Adrian and Matthews confirmed Berger's first record of changes of electrical potential in the brain and showed their origin. Dr. Brain includes a series of tracings from epileptics contributed by Mr. Grey Walter, and summarizes a large amount of recent literature on the electrical behaviour of the brain in epilepsy and sleep and under the influence of drugs and lesions. Other new matter concerns vitamin deficiencies in relation to nervous disorder, diseases due to neurotropic viruses, the use of prostigmin in myasthenia gravis, the chemistry of the muscular dystrophies, muscular disorders associated with thyroid disease, and the treatment of meningitis with sulphanilamide.

## PAEDIATRICS

*The 1939 Year Book of Pediatrics.* Edited by Isaac A. Abt, D.Sc., M.D. With the collaboration of Arthur F. Abt, B.S., M.D. (Pp. 520. 2.50 dollars; 12s. 6d.) Chicago: The Year Book Publishers; London: H. K. Lewis and Co., Ltd.

*Pediatrics and Pediatric Nursing.* By A. Graeme Mitchell, M.D., Echo K. Upham, R.N., and Elgie M. Wallinger, R.N. (Pp. 576. 15s. net.) Philadelphia and London: W. B. Saunders Company. 1940.

*Your Child's Food.* By Miriam E. Lowenberg. (Pp. 300. 12s. 6d.) London: McGraw-Hill Publishing Company.

Edited indefatigably by Drs. I. A. Abt and A. F. Abt, *The 1939 Year Book of Pediatrics* contains abstracts of all the important work, principally Anglo-American, in diseases of children during the year under review. It is true that over 400 contributions (and over 100 illustrations) have been culled from work published in twelve countries (Finland included), but experts from France and Germany do not seem to be quoted as much as the volume of the paediatric literature from these countries would appear to warrant. It is gratifying to find numerous abstracts from the two British paediatric journals, as well as from the general medical periodicals produced in this country. All interested in diseases of children will find this yearbook a valuable summary of progress.

Professor A. Graeme Mitchell with two associates from the nursing staff of the Children's Hospital, Cincinnati, has written a textbook for children's nurses called *Pediatrics and Pediatric Nursing.* Professor Mitchell's previous contributions to paediatric literature, and especially his textbook written with Dr. J. P. Crozer Griffith, make it certain that the information given to nurses who read this book will be sound and sane. The plan followed has been to deal with general matters—hygiene, development, organization, nutrition—first, then with diseases and their treatment, and finally with details of therapeutic procedures and nursing routine, this order being chosen because, it is argued, a nurse will carry out her work better if she knows why she is doing it. The whole book has been well planned and its production as regards type, general arrangement, and illustration is of a high standard. In many matters, however, adaptation to the use of nurses in this country would be difficult; this means that it will be found more useful as a work of reference in the library of the nurses' home than as a guiding textbook. In the former role it can be given a warm welcome.

An attractively illustrated book on diet for children entitled *Your Child's Food,* by Professor Miriam E. Lowenberg, can be heartily recommended to parents who are either faced with the problem of the child who won't eat or who wish to know more about food and how to make best use of it. They will find this volume sound and helpful if (and it is possibly an insular objection) they can find an American friend to explain what some of the foodstuffs are!

## OPHTHALMOLOGICAL TRANSACTIONS

*Transactions of the Ophthalmological Society of the United Kingdom.* Volume LIX. Parts I and II. (Part I, pp. 487; Part II, pp. 516. 30s. for two parts.) London: J. and A. Churchill. 1939.

The transactions of the annual meeting of the Ophthalmological Society held in April last year and reported in our columns at the time (April 29, p. 887) have now been published in full. Both the orthodoxy and vitality of the society are well reflected in the two parts of this volume. The presidential address by Dr. T. Harrison Butler deals exhaustively and in a most interesting manner with that difficult structure the anterior capsule of the lens. The light thrown on this tissue by slit-lamp studies, and not least by the author's own contributions, has made the anterior capsule of considerable importance in clinical ophthalmology. The Bowman Lecture, by Professor H. Weve of Utrecht, breaks new ground in indicating how diathermy therapy in eye disease has passed on from treatment of retinal detachment to that of intraocular tumours. The main discussion of the congress, devoted to the problems of refraction, drew ten contributions and indicated an unsuspected range of disagreement on fundamentals—a disagreement also revealed on the problems of accommodation, as brought out in the paper by Mr. Adamson and Mr. Fincham. Mr. Riddell's paper on multiple factors in hereditary eye disease contains an incidental confirmation of Dax's finding of a melanosome-dispersing substance in the blood and urine of patients with retinitis pigmentosa—an important advance in the study of this affection.[1] Foreign guests are well represented: Dr. A. J. Beddell of Albany, N.Y., on fundus changes in diabetics; Professor H. Lauber of Warsaw, on pallor of the disk and on combined operations for glaucoma; Dr. M. Klein of Budapest, on different methods of wound closure after cataract operation; and Dr. H. Gjessing of Drommen, Norway, on Holth's iridencleisis. Part I includes a number of papers by workers in this country and also the transactions of the North of England ophthalmological Society and of the South-Western Ophthalmological Society, consisting essentially of case records apart from two exhaustive papers by Professor H. E. Roaf of Liverpool, one dealing with the relation of the retinae to the cerebral cortex and the other with the recognition of colour.

Part II contains the proceedings of the Oxford Ophthalmological Congress (noted in our columns, July 15, 1939, p. 134). In addition to a full discussion on orthoptic

[1] *British Medical Journal,* 1938, 2, 1052.

training, which ably brings out the limitations as well as the uses of this procedure, there were contributions on *Drusen* of the retina by Dr. Bernard Samuels of New York, and on corneal transplantation by Dr. V. La Rocca of the same city. The Doyne Memorial Lecture on the ocular consequences of certain chiasmal lesions, by Mr. J. A. Williamson-Noble, contains a helpful account of opto-chiasmic arachnoiditis. Papers on miners' nystagmus and on other aspects of industrial ophthalmology constitute much of the remainder of these proceedings, while the rest of the volume is devoted to the activities of the Midland Ophthalmological Society and the Irish Ophthalmological Society, the concluding 130 pages being taken up by Dr. T. Hewitson Brown's Treacher Collins prize essay for 1938 on cerebrospinal disease and its relation to the optic nerve—a rather textbookish and selective summary of the literature on the subject.

The standard of production of the *Transactions of the Ophthalmological Society* for the past fifty-nine years has been uniformly high. An innovation has now been introduced in starting each major contribution (and some minor ones) on a fresh page on the right-hand side, presumably to cheapen reprints. This has led to some ugly gaps in the volume—eyesores that might have been avoided by the exercise of a little more ingenuity.

## Notes on Books

*Intelligence and Crime: A Study of Penitentiary and Reformatory Offenders*, by SIMON H. TULCHIN, is published in this country by the Cambridge University Press. The hypothesis that crime is connected with mental deficiency has been attacked from many sides in recent years. The Institute for Juvenile Research of Chicago, as part of its research into behaviour, promoted an intelligence survey of all the inmates of three large prisons in the State of Illinois—a total of over 10,000. The results are comparable with those obtained in the U.S. Army, as the same procedures were used. Though the study is chiefly concerned with the relation between intelligence and crime, it also contains information on certain physical and social factors such as race, age, recidivism, and education. The author concludes that weakness of intelligence is as common in the Army as in the penitentiary. Intelligence may be an important contributing factor in determining the type of crime, but many other factors enter as well. These other factors he considers to be all-important, and failure to consider their influence makes statistical findings difficult to interpret if not absolutely meaningless. He calls for a psychological as well as a legal classification of crime. The pressing need is, in his opinion, a body of well-planned individual case studies. This is a concise and competent report of a valuable piece of work, but it is none the more legible for being printed throughout in imitation typescript.

We have received the tenth volume of the French system of medicine, surgery, and obstetrics—*Pratique Médico-Chirurgicale*—which forms the second supplement to the volumes published in 1931, the first having appeared about two years ago (see *Journal*, 1937, **2**, 1023). The following list of some of the principal articles with their authors will be of interest to those who wish to become familiar with current French practice: Infant feeding (Lesné and Clément), anaesthesia (Monod), criminal abortion (Fruhinholz), bronchoscopy (Soulas), burns (Rudler), cholangiography (Brock), French Codex of 1938 (Hazard), surgical treatment of heart disease (Bérard), morbus coxae senilis (Haguenau), surgical treatment of diabetes (Bréhant), hernia of the diaphragm (Menégaux), brain surgery (Mahoudeau), complications of beauty treatment (Duvoir and Desoille), insurance (Crouzon), ski accidents (Braine), pyretotherapy (Sûrmont), radiological examination (Didiée), surgery of the lung (Monod), occupational diseases (Duvoir and Desoille), genital hormones (Mocquot), treatment of prostatic hypertrophy (Fey and Dossol), tomography (Bernard), diagnosis of pulmonary tuberculosis (Léon-Kindberg), vaccination against typhus (Brumpt), treatment by vitamin $B_1$ (Justin-Besançon). The publishers are Masson et Cie of Paris, and the price of Vol. X is $5.25.

## Preparations and Appliances

### THE THOMAS SPLINT IN FIRST AID

Dr. MARGARET L. CLAY (Virginia Water, Surrey) writes:

The use of the Thomas splint in injuries of the thigh has been strongly advocated, and the method described in the British Red Cross Society's Manual must have been widely practised by members of the casualty services. The routine of this method has been upset by the arrival of a new type of stirrup supplied with the splint by H.M. Government.

This stirrup is of a design which has one serious disadvantage; it can only be sprung on *inside* the bars of the splint. To apply this type of stirrup, one of two alternatives must be adopted: (1) The splint must be threaded on to the leg with the stirrup already in position (this is clumsy); or (2) the extension bands of the skewer or clove hitch must be untied to allow the stirrup to be sprung on (this is, in my opinion, undesirable).

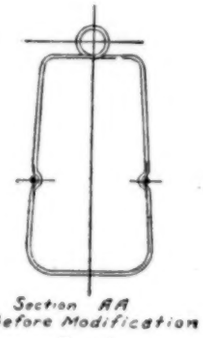

FIG. 1.

A minor modification in the design of the stirrup now being issued appears to overcome the difficulty. (See accompanying sketches.) Fig. 1 shows the stirrup before modification, and it will be seen that the bars of the splint are *outside* the stirrup. Fig. 3 shows the stirrup after modification, the only difference between this figure and Fig. 1 being that the semicircular

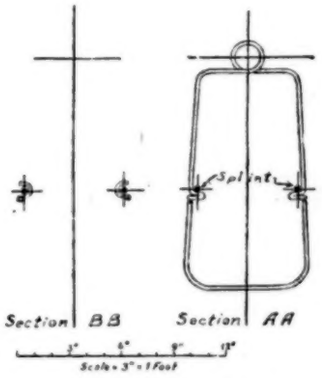

FIG. 2. FIG. 3.

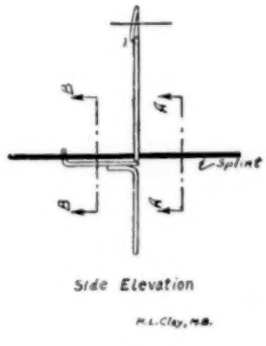

FIG. 4.

crooks in Fig. 1 have been compressed into ledges upon which the bars of the splint are carried. Fig. 2 shows the crooks of the horizontal arms of the stirrup; these crooks are not altered. Fig. 4 shows a side view of the stirrup after modification.

In the modified design it will be seen that the bars of the splint are *outside* the crooks of the horizontal arms of the stirrup, but *inside* the vertical bars; the splint bars are therefore held as in a vice.

The advantages of the proposed modification are: (1) The stirrup can be sprung on to the splint at the prescribed stage in the drill. (2) The splint is three-quarters of an inch higher on the stirrup; this allows the toe of the shoe of an average adult to rest on the top of the stirrup (at present this is only possible with a really large foot). (3) The stirrup is more firmly fixed to the splint, as has already been described.

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## 1837-1937: A RETROSPECT OF VITAL STATISTICS

In the first of William Farr's Letters to the Registrar-General, dated May 6, 1839, these words occur:

"The annual rate of mortality in some districts will be found to be 4 per cent., in others 2 per cent.; in other words, the people in one set of circumstances live 50 years, while in another set of circumstances, which the registration will indicate, they do not live more than 25 years. In these wretched districts, nearly 8 per cent. are constantly sick, and the energy of the whole population is withered to the roots. Their arms are weak, their bodies wasted, and their sensations embittered by privation and suffering. Half the life is passed in infancy, sickness and dependent helplessness. In exhibiting the high mortality, the diseases by which it is occasioned, and the exciting causes of disease, the abstract of the registers will prove, that while a part of the sickness is inevitable, and a part can only be expected to disappear before progressive social amelioration, a considerable proportion of the sickness and deaths may be suppressed by the general adoption of hygienic measures which are in actual but partial operation. It may be affirmed without great risk of exaggeration, that it is possible to reduce the annual deaths in England and Wales by 30,000, and to increase the vigour (may I not add the industry and wealth?) of the population in an equal proportion; for diseases are the iron index of misery, which recedes before strength, health and happiness as the mortality declines."

In the recently issued text volume of the Registrar-General's 100th Annual Report[1] (which corresponds to the "Letters" of Farr) Farr's prophecy is put to the proof. In the first year of registration the deaths of 338,660 persons were recorded. Had the rates of mortality prevailing in 1937 applied to the population of 1837–8 the deaths would have been 141,700. The improvement has been more than six times what Farr regarded as immediately practicable. In one respect the generation of our great-grandparents was happier than ours. Even the Crimean War was fifteen years ahead, while Waterloo was twenty-four years behind. But had our generation been vouchsafed the Early Victorian peace at the price of retaining the Victorian death rates we should be losing annually some 50,000 to 60,000 more males aged 20–45 than at the rates of 1937. Twenty years of Early Victorian peace would cost almost as many young lives as the war of 1914–18. Farr had need of optimism. During his official life improvement was terribly slow; it was not until 1875 that the decline of the death rate became unmistakable, and not until 1901 did the sacrifice of infant lives really diminish. In 1662 the pioneer of vital statistics, the London tradesman John Graunt, surmised that 36 per cent. of live-born children did not survive the sixth year of life. His data were imperfect, but he was a genius. Farr made a life table for London on the experience of 1861–70, and we find from this that the proportion was about 32 per cent. Victorian London was not much healthier for children than Restoration London.

Between 1837 and 1937 mortality has decreased for both sexes and at every age, but most spectacularly at the younger ages. The age of maximum relative improvement is 10–15 in girls and 5–10 in boys. Girls of 10–15 died in 1837–8 at nearly five times and boys of 5–10 at 4.4 times the 1937 rate. In the text volume for 1937 another comparison is made—namely, of the numbers dying from certain causes in the last six months of 1837 and deaths from these causes in July–December 1937 (reduced to the appropriate size of population but without correction for age distribution). Typhus, typhoid, and paratyphoid accounted for 9,047 deaths in 1837, for 47 at the rates of 1937. Respiratory and disseminated tuberculosis accounted for 27,754 in 1837, for 4,188 in 1937. The comparable figures for deaths in childbed are 1,265 and 339. For violent deaths they are 4,845 and 4,206. This last article, although showing an improvement, does not produce the glow of national satisfaction which the other figures quoted may well excite. Indeed, both symbolically and literally, the statistics of violent deaths should give us singularly little cause for self-righteousness. We are to remember that in 1837 very little was done to protect the lives of children labouring in factories from the hazards of machinery, little to reduce the dangers of coal mines. The violent deaths then appearing in the statistics contained a large proportion due to causes which what Farr called progressive social amelioration has eliminated. In 1937 this same progressive social amelioration was responsible for 5,547 deaths from violence which could not have been exerted in 1837. Let us look at this a little more closely.

The first complete calendar year of registration was 1838, in which year 8,359 males and 3,368 females are said to have died violent deaths. To make these figures roughly comparable with those of 1937 we will multiply by the ratio of the respective populations, 2.69. We have 22,486 and 9,060. The registered deaths in 1937 were 14,893 and 7,903. The improvement is substantial (greater than on the six-months figures for 1837), and yet the total for 1937 includes 5,547 deaths caused by various types of road motor vehicles. Of those slain upon our roads 40 per cent. of the males and 69 per cent. of the females were pedestrians. It is not likely that we shall be provided with the detail of the grimmer record of 1939 or perhaps even that of 1938, but these figures are enough to give us pause. However, we may reasonably look on the general comparison of the first and the hundredth year of registration with pleasure. What are the respective shares of purely medical and of general social betterment may not be easy to assign arithmetically. But our share is at least substantial. The work of Simon, Budd, Snow, Lister, and Farr himself, the propaganda (in the best sense of that now degraded term) of the medical press and of medical associations, have been powerful factors in the declining death rate.

[1] Registrar-General: Statistical Review of England and Wales for 1937. New Annual Series No. 17. (Price 3s. 6d.)

## LYMPHOPATHIA VENEREUM

It would be no exaggeration to say that a dozen years ago scarcely anyone in this country, with the exception of a few specialists in tropical medicine, had any knowledge of the condition variously described as climatic bubo, lymphogranuloma inguinale, poradenitis nostras, or lymphopathia venereum. Following the original demonstration by Hellerstrom and Wassen[1] that the disease was due to a filterable virus which could be transmitted to monkeys, mice, and other laboratory animals, it was soon recognized that the disease is of world-wide distribution and that its manifestations are protean. In Europe there are now few countries where lymphopathia venereum has not been described. It is particularly prevalent in Rumania and in Scandinavian countries, but comparatively rare in Holland, Russia, and Great Britain. Since Stannus and Findlay[2] described the first autochthonous case, however, a number of patients suffering from either inguinal adenitis or rectal stricture have been found who have acquired the infection in this country. The main reason for the comparative immunity of these islands would seem to lie in the fact that infected persons arriving here are chiefly males, who are infectious only during the comparatively short period—a matter of some ten to fourteen days—during which the primary sore is present. In the female, on the other hand, the virus may be present in the vaginal secretion for many months.

By means of the allergic skin test first described by Frei,[3] and by isolation of the specific virus in many cases, it has been possible to show that the virus of lymphopathia venereum causes not only the primary herpetiform sore and the inflamed inguinal lymph nodes, the most common manifestations in the male, but such conditions as rectal stricture, in both male and female, and elephantiasis of the vulva. In a recent review Favre and Hellerstrom[4] point out that other lesions, such as arthritis, meningitis, conjunctivitis, orchitis, and skin rashes, may be due to the virus of lymphopathia venereum, while Litarczek, Stella, and Chisar[5] have described a case associated with peritonitis and pleurisy. Evidence has also been brought forward by Harrison and Worms[6] in favour of the view that the non-gonococcal urethritis first described by Waelsch and known in this country as millet-seed urethritis is in reality due to infection with the virus of lymphopathia venereum. Certain characteristic biochemical changes in the blood have been noted by Jersild,[7] who describes hyperproteinaemia, hyperglobulinaemia, and a positive Takata reaction. Although in the peripheral circulation there is no very noticeable change in the leucocyte picture, Gsell[8] has found that the bone marrow removed by sternal puncture shows a strong leucopoiesis and a very definite increase in the number of reticulum cells, many of which are gathered into small groups not unlike those found in association with myelomata.

The agent responsible for all these various changes is a filterable virus with dimensions of from 125 mμ to 175 mμ, as shown by Miyagawa and his colleagues[9] and by Broom and Findlay.[10] From the fact that it can only be cultivated in association with living tissue cells and, with difficulty, on the chorio-allantoic membrane of the developing chick embryo, the agent of lymphopathia venereum might be regarded as a typical virus. It possesses, however, certain peculiarities, for with the possible exception of the virus of trachoma it is the only filterable virus which is sensitive to the action of sulphonamide compounds. The effect of prontosil, sulphanilamide, and sulphone derivatives in curing the experimental disease in animals, demonstrated by Bâr,[11] Levaditi,[12] and MacCallum and Findlay,[13] has been followed by successful results in human cases. The most remarkable cures have occurred, as is to be expected, in early cases of inguinal adenitis, but considerable improvement has also been brought about in many cases of rectal stricture of some years' duration. Hebb and Felton,[14] for instance, have recently treated eight cases of rectal stricture with sodium sulphanilyl sulphanilate, four with sodium sulphanilate, and two with mixtures of sodium sulphanilyl sulphanilate and sodium sulphanilate. Large amounts of the drugs, such as 385 grammes of sodium sulphanilyl sulphanilate over a period of 189 days, were necessary, but in all cases there was cessation of the bloody purulent discharge, disappearance of fistulae, and absorption of the rectal stricture. In four cases in which colostomy had previously been performed with no improvement treatment was followed by closure and healing of the colostomy and restoration of normal bowel function. Considerable improvement, if not complete cure, was also noted in four cases of ulcerative colitis. Since evidence is gradually accumulating that at least some cases of ulcerative colitis may be due to infection with the virus of lymphopathia venereum, it seems worth while to apply the Frei test to these, and, if the result is positive, to employ sulphonamide compounds in treatment. Another peculiarity of the virus of lymphopathia venereum is that, like those of psittacosis, trachoma, and inclusion conjunctivitis, it undergoes a developmental cycle; Findlay, Mackenzie, and MacCallum[15] have found that shortly after inoculation large forms appear and later give rise to the typical small forms. The two forms can also be differentiated by staining methods. Very similar results have also been described by Manabe [16] in tissue cultures.

One difficulty in connexion with lymphopathia venereum to which more than one writer has drawn attention lies in the question of nomenclature. The term "lymphogranuloma" has for long been applied to Hodgkin's disease, while "granuloma inguinale" refers to a disease associated with the presence of Donovan

[1] 8th Int. Congr. Derm. Syph., Copenhagen, Aug. 5-9, 1930.
[2] *Lancet*, 1933, **1**, 358.
[3] *Klin. Wschr.*, 1925, **4**, 2148.
[4] *Rev. d'Hyg.*, 1939, **61**, 401.
[5] *Bull. Mém. Soc. méd. Hôp. Bucarest*, 1939, **21**, 242.
[6] *Brit. J. vener. Dis.*, 1939, **15**, 237.
[7] *Acta Derm.-venereol.*, Stockh., 1937, **18**, 491.
[8] *Klin. Wschr.*, 1939, **18**, 778.
[9] *Jap. J. exp. Med.*, 1935, **13**, 723.
[10] *Brit. J. exp. Path.*, 1936, **17**, 135.
[11] *Klin. Wschr.*, 1938, **17**, 588.
[12] *C. r. Soc. Biol.*, Paris, 1938, **128**, 138.
[13] *Lancet*, 1938, **2**, 136.
[14] *Publ. Hlth. Rep.*, Wash., 1939, **54**, 1750.
[15] *Trans. roy. Soc. trop. Med. Hyg.*, 1938, **32**, 183.
[16] *Jap. J. exp. Med.*, 1939, **17**, 355.

bodies. (Incidentally, Greenblatt, Dienst, Pund, and Torpin,[17] though they reproduced the disease in three volunteers, were unable to cultivate the Donovan bodies, while the pseudo-bubo found in this condition is not an adenitis but a subcutaneous granuloma.) "Poradenitis nostras" would in many ways appear to be the most satisfactory term, but, unfortunately, it has not gained currency. "Lymphopathia venereum," therefore, though not entirely satisfactory, remains the most suitable name to describe this important disease.

## PUBLIC HEALTH PROBLEMS IN EIRE

The nature of public health problems varies little in civilized countries of the temperate zones. Statistics of morbidity and mortality in the northern and southern zones and in both hemispheres exhibit the same main causes of disability and death. In infancy and childhood, after the initial decimation of prematurity and the casualties of parturition, infections of one kind or another fill the picture; in later life tuberculosis takes precedence for a time among causes of death, followed later by cancer and cardiovascular disease, while throughout the whole span of life respiratory disorders, major and minor, rank high among the causes of both sickness and death, and digestive diseases and the neuroses harass the years of working life. The international character of medicine has brought each country nearly to the same level of appreciation of its public health needs, and public health remedial programmes have much the same content in different civilized lands. But the balance and the emphasis vary. Even within the narrow compass of England and Wales local plans and achievement are very uneven, as Mr. Norman Wilson has been at pains to show in his survey of the public health services. This disparity is naturally greater between countries, and its existence strikes home to those whose work and habitation have been in different lands. Such is the experience of Dr. C. J. McSweeney, who finds things waiting to be done in Eire for the health of the people, some of which are the common currency of public health in other places.[18] He points out that 852 Dublin children died of diphtheria in ten years from 1929 to 1938, about 700 from measles and 600 from whooping-cough during the same period, while 200 children die annually in the city from gastro-enteritis. For diphtheria, immunization is the solution. While measles and whooping-cough are difficult to reduce by prophylaxis or administrative measures, mortality from them could be greatly diminished by hospital care. Two hundred new hospital beds should be provided for these diseases, which would also be available for diarrhoeal cases in the summer in order to bring about the great saving of life which Dr. McSweeney believes to result from modern treatment of dehydration. As to the school child, he protests against the crowding of children in buses on their way to school, and the absence of any provision in Dublin for open-air education or for nursery schools or classes for toddlers. A voluntary scheme for the care of acute rheumatism in childhood has been in existence for three years but needs expansion and official support, while nothing so far has been done about chronic rheumatism. Finally, Dr. McSweeney returns to the plea which he made three years ago for an Irish Serum Institute, primarily for research but capable of expansion to provide serological and immunological products at a time such as the present, when external sources of supply may be cut off. Successful schemes for each of these problems are in existence in other parts of the world, and their adoption in Dublin is a social obligation not involving undue cost.

[17] *J. Amer. med. Ass.*, 1939, **113**, 1109.
[18] *Irish J. med. Sci.*, Feb., 1940.

## SUGAR AND OILS IN MEDICINES

We publish at page 581 a statement on foodstuffs for therapeutic use prepared by the Therapeutic Requirements Subcommittee of the Medical Research Council and approved by the Ministry of Food and the Ministry of Health. This should be read with care by all medical men and women in active practice in this country. With regard to sugar, a survey of official preparations and standard prescriptions shows that the prescribing of preparations containing this foodstuff could be restricted almost entirely to medicines for children without any serious loss of therapeutic efficiency. Doctors and pharmacists are urged to reduce, by voluntary effort, the quantity of sugar used in making medicines. It is understood that enough cod-liver oil is at present available to meet all reasonable medical requirements, but supplies must be husbanded and strict economy should therefore be observed in its preparation and administration. The maximum effective daily dose of vitamins A and D is contained in about three teaspoonfuls of cod-liver oil, and no useful therapeutic purpose is served by exceeding that dose. With regard to starch, animal fats, and vegetable oils and fats, special privileges have been granted to the medical and pharmaceutical professions by the Ministry of Food in order to satisfy therapeutic needs. Efforts will be made to ensure that enough pure leaf lard is available for all legitimate medical purposes, but substitutes should be used wherever possible. Some of the early Orders prohibiting the use of vegetable oils and fats except for food have now been relaxed in favour of medicaments for internal and external administration. For the present sufficient supplies of paraffin in various forms (liquid, soft, and hard) are available for medical purposes, but doctors are urged to exercise every economy with these substances and with all foodstuffs used in therapeutics.

## REGIONAL VARIATIONS IN CANCER MORTALITY

In the statistical review of England and Wales for 1937 which is the subject of a leading article elsewhere there is, in addition to other special studies, one of particular interest on the site distribution of cancer in different areas of the country. Some extraordinary differences in cancer mortality rates are revealed between one large area and another which variations in diagnosis can hardly explain. For instance, taking the thirteen towns in England and Wales with a population of 250,000 or more, it is found that the mean annual death rate in 1921–30 at ages 45–65 from cancer of the lung was over 200 per million males in Leeds, Sheffield, Nottingham, and Manchester, and yet less than one-third of that value in Stoke-on-Trent, Bristol, Leicester, and Portsmouth. Laryngeal cancer, which is not especially difficult to diagnose, shows a parallel variation, while the very low rate of Bristol, a large hospital centre, is noticeable. On these grounds it is very unlikely that such wide variations can be mere indices of diagnosis. Considerable regional differences also exist in the case of cancer of the stomach. Compared with London there are significantly high death rates of both sexes from this form in Liverpool,

Manchester, Stoke, and Hull. But the most striking characteristic is the great excess of gastric cancer in North Wales. Here the rates are approximately double the corresponding English county rates (excluding county boroughs) for females and substantially in excess for males. The explanation may lie, the Registrar-General suggests, either in a special racial susceptibility or else in dietary habits, and a field study of the latter might well be worth while. Another important fact to be shown is the large excess of uterine cancer in the counties of Durham and Northumberland, coupled with low rates for the breast and ovary; these exceptionally high rates are, indeed, part of a general excess for this site in the north-eastern counties. For instance, at ages 45–65 the rate in England and Wales as a whole, in 1921–30, was 577 deaths from cancer of the uterus per million females; in Northumberland and Durham it was 708, in the North Riding 597, in the East Riding 795, and in the Lindsey division of Lincolnshire 706. Again, variations in diagnosis or effectiveness of treatment cannot easily be invoked to account for such differences. A recorded excess among London males for cancer of the tongue, mouth, and oesophagus is also noticeable (the last showing no excess among females), and London's relatively high rate for cancer of the rectum among females but not among males is difficult to explain. High rates from cancer of the bladder among females are, it seems, another characteristic of London and the South-East. This analysis of local differences in the incidence of different forms of cancer should be studied in conjunction with the similar reports by Dr. Percy Stocks in the annual reports of the British Empire Cancer Campaign. At present it is difficult to frame hypotheses to account adequately for such observations, but that detracts neither from their interest nor from their value.

## PREVENTION OF MENINGO-CEREBRAL ADHESIONS

In last week's *Journal* we published an article by Wilder Penfield and his co-workers of the neurosurgical department at McGill on methods for preventing adhesion between the brain and its coverings when damaged as the result of injury. By the interposition of sheets of various material between the brain and meninges at a site of injury efforts were made to prevent the formation of an adherent cicatrix. The efficacy of different tissues such as "cargile" membrane (that is, ox peritoneum in dry sterile sheets), mica, fascia lata, fat, metal plates, the familiar transparent wrapping material made from wood-pulp, and other substances was tested by placing sheets of these materials between the temporal muscle and the injured cerebral cortex of the cat, the intervening bone and dura having been removed. Gross adhesions formed with all the materials used, and in many instances a severe cellular reaction was noted as well; with sheets of prepared allantoic or amniotic membrane, however, adhesions were minimal or completely absent and cellular reactions only very mild. The material which the Montreal workers favour is called "amnioplastin" and is prepared from membranes received from the maternity department, the chorion having been stripped away and the amnion prepared by various washings in water and alcohol and subsequently sterilized in an autoclave. Sheets of amnion thus prepared are either preserved dry or kept in 75 per cent. alcohol; they have the appearance of a thin pliable transparent membrane devoid of cellular structure. Experimentally it has been shown that after twenty days dural and pial defects are closed and the intervening amnioplastin appears as a thin amorphous material. By thirty days there is no longer any trace of the amnioplastin, the wounded brain and meninges are healed and not adherent. Penfield has used the material in practice, interposing a thin sheet between dura and brain after craniotomy, and he advocates its employment after débridement in the case of penetrating head wounds, the amnioplastin being spread over the wounded surface of the brain to prevent its adhesion. Meningo-cerebral adhesions are apt to produce unpleasant sequels, and particularly, perhaps, post-traumatic epilepsy. There can be no doubt of the importance of avoiding their formation and preserving intact the insulation of neural tissue, a principle laid down by Wilfred Trotter in his Horsley Memorial Lecture.[1] It appears as if the material for which surgeons have been waiting to enable this to be done more effectively is now to hand, and, as in the central nervous system, so with the peripheral nerves, the value of amnioplastin as a temporary scaffolding to permit regeneration of an effective and all-important insulation is likely to be great. It is possible also that amnioplastin may have other uses, such as for the repair of tendon sheaths.

## RICKETS IN GERMANY

It will be a great pity if the propaganda machine starts manipulating medical statistics, but the obvious temptation in Germany to attribute the "English disease" to the blockade may well prove irresistible. It is most important, therefore, to ascertain the frequency of rickets in that country for the period immediately before the present war, and Dr. E. Graser has provided interesting figures[2] from Frankfort-on-Main. During the months of June and July, 1939, a house-to-house visitation was carried out, with the co-operation of the medical societies, to ascertain the number of legitimate children in Frankfort and suburbs, born in February and March of the same year, who showed clinical evidence of rickets. During the two selected months nearly 800 children were born, and it was possible to examine 76 per cent. of them, those not examined being dead, in hospital, away from home, and so forth. (The illegitimate infants, approximately 10 per cent. of the total births, were not investigated, on account of administrative difficulties.) The investigations included not only a clinical examination of the infants but also careful inquiry into methods of feeding, housing conditions, and standard of parental care. It was found that just over 80 per cent. of all the infants examined showed definite evidence of healed or florid rickets. The principal manifestations of rickets at the age period of the infants investigated (2½ to 5½ months) were craniotabes, rickety rosary, Harrison's sulcus, "pot-belly," and muscular hypotonia. The percentage of infants affected is very similar to that found in the clinical records of the Frankfort University Children's Clinic in 1936 by Professor de Rudder, but Dr. Graser points out that, high as the figure is, it is only prevented from being even greater by the fact that a proportion of those infants considered to be free from rickets had already received anti-rachitic treatment. He sums up the situation in this sentence: "Whether rich or poor, high-born or lowly, in our city every baby suffers from rickets unless special precautions are taken." Dr. Graser makes an interesting analysis of the various factors which contribute to this situation. The time of year chosen for the investigation was quite deliberate, as the infants had lived through the late winter and spring, and actually in 1939 the hours of sunshine

[1] *British Medical Journal*, 1926, **2**, 103.
[2] *Z. Kinderheilk.*, 1939, **61**, 520.

for this period were considerably below the average for the preceding twenty years. But it was clear that by no means the best use was made of what sunshine and fresh air were available. One definite cause of rickets, it is asserted, is the fetish of the "draught." Infants who were allowed to lie out in the garden or on a balcony or at an open window in all weathers showed remarkably less rickets than those who were given a "sunbath" cluttered up with clothes behind shut windows. The analysis of the effects of nutrition proved to be very difficult because of the large number of cases in which there were long periods of mixed feeding with a failing breast-milk supply. But of those children completely breast-fed one in three was free from rickets as compared with one in nine of those whose feeding had been artificial from the beginning. Despite these satisfactory figures, however, the percentage of rickets among breast-fed babies is uncomfortably high and may be due, according to Dr. Graser, to a popular belief fostered by the medical profession that anti-rachitic measures are unnecessary for breast-fed infants. He makes the plea that every infant, no matter what the social status of the parents, should have a supplement of vitamin D, which should be regarded not as a medicine but as a routine and regular part of infant feeding. It is probable that in the early months of 1939 butter was being "converted" into "guns" in Germany, but it would be unwise to forecast what the incidence of rickets would be if a similar investigation were made in an English industrial town. Dr. Graser's plea for routine vitamin D for all infants is one which might well be followed here.

## THE PITUITARY AND MELANOPHORES

Catherine Veil, whose previous researches are summarized in her most recent paper,[1] has shown that in fresh-water teleostean fish such as the carp and the cat-fish adrenaline and electrical stimulation will cause contraction of the melanophores in pieces of isolated skin. Various pharmacological experiments demonstrate that these effects are direct and indirect respectively—that is to say, that the pigment cells are under the influence of sympathetic nerves, so that electrical stimulation causes liberation of adrenaline at the cell surface with consequent contraction of the cell. She has further been able to hypophysectomize cat-fish satisfactorily so that they survive for several months. These hypophysectomized fish are invariably pale, almost white, the melanophores being all in a state of maximal contraction. Injection of intermediate lobe extracts of the pituitary causes a dilatation of the cells. From her experiments it is apparent that light is the stimulus for production of the pituitary melanophore-expanding hormone. Thus the fish is quite pale if all light is excluded, showing that the pituitary is quiescent. If the fish is exposed to light against a black background the pigment cells are dilated; evidently the melanophore-expanding hormone is being secreted. Against a white background the fish is again pale; in this case it is suggested that the stronger light stimulates the sympathetic and the cells are contracted. *In vitro* experiments with isolated skin show that adrenaline and intermedin are antagonistic. Boernstein[2] has shown that the melanophore-expanding hormone present in the rat's pituitary is increased when the rat is exposed to strong light. This effect of light in stimulating the posterior pituitary is analogous with the effect of light on the anterior lobe described by Benoit[3] in the goose. Further evidence that the pituitary control of melanophore expansion is of physiological significance is reported by Dr. H. Muir Evans in the current number of the *Journal*. He shows that seasonal changes in the behaviour and colour of eels are correlated with histological changes in the anterior and posterior lobes of the pituitary. Dr. Evans finds that the blackening of the fish when it changes into a silver eel corresponds to an increased secretory activity of the pars intermedia, as judged by histological appearance. He also presents evidence that the immediate stimulus for migration, which it is thought is basically conditioned by gonad development, is produced by conditions of light—presumably affecting the anterior lobe as in Benoit's experiments. Incidentally, we should like to congratulate Dr. Evans on possessing the ancient virtue of natural curiosity which has allowed him, during some forty years in general practice, to make these observations. In the correlation of such scientific facts as those of pituitary histology with field observations on the habits of eels the laboratory research worker is generally quite out of his depth, and the services of the field worker are so useful. We could only wish that more practitioners were making such valuable use of their spare time and medical knowledge.

[1] *J. Physiol. Path. g/n.*, 1940, **37**, 913.
[2] *Amer. J. Physiol.*, 1939, **126**, 437 P.

## SMOKE ABATEMENT IN WARTIME

One of the good causes which the heavy hand of war has thrust into the background is smoke abatement. In some quarters the tendency to let things (including smoke clouds) drift is reinforced by the argument that a smoke pall over a town is a useful disguise to be employed against enemy aircraft. A moment's thought would suggest that it must equally embarrass defending aeroplanes and ground defence. Moreover, smoke from industrial works, and particularly the incandescence of burning spoil-banks in coal-mining areas, may easily betray the whereabouts of industrial centres. The executive committee of the National Smoke Abatement Society has issued a cogent eight-page pamphlet urging a continuance of observations and control of smoke emission during wartime on the double ground of fuel economy and preservation of national health. A national fuel policy is advocated as a means of stopping the waste of the nation's greatest material asset and of preventing atmospheric pollution. The problem of smoke abatement is by no means wholly industrial. The domestic chimney is a hardened offender. Early in the war restrictions upon domestic fuel consumption were imposed or projected but afterwards withdrawn. No doubt the rationing of domestic fuel would be administratively much more difficult than the rationing of food, because while the unit of food consumption is the individual, the unit of fuel consumption is the household, which varies in size from time to time. But such rationing may still be necessary, and if restrictions should be introduced there seems to be a good case for insisting that the limitation shall be upon the aggregate consumption of all fuels, not upon the consumption of a particular type of fuel. This would encourage the use of smokeless coal or smokeless derivatives of coal in place of the open fire burning the bituminous product, which, however much it may rejoice the domestic hearth, is wasteful and smoke-producing.

[3] *C. r. Soc. Biol.*, Paris, 1938, **127**, 909.

# SURGICAL PROCEDURES IN GENERAL PRACTICE

*This is one of a series of articles contributed by invitation*

## HALLUX VALGUS AND RIGIDUS

BY

F. G. ALLAN, F.R.C.S.

The first metatarso-phalangeal joint, owing to the stress to which it is subjected, is prone to develop changes which lead to considerable deformity and cause great disability. In hallux valgus deformity is the outstanding feature, while in hallux rigidus it is loss of mobility. The former condition is by far the more common, and female sufferers are in the majority. More men than women appear to develop a hallux rigidus. In both conditions the underlying pathological changes are the same, and treatment is directed along similar lines.

### HALLUX VALGUS

In this condition the great toe is deflected at the metatarso-phalangeal joint towards the second toe. This deviation rarely occurs alone, but is accompanied by other changes in the foot—a widening of the fore part, and often by a flattening of the longitudinal arch.

The causes are several. The deformity may appear in late childhood, and it would seem that heredity plays a part. Most cases, however, are noticed in later life, and as women are far more often affected than men it is certain that improper footwear must be blamed above all other causes. High heels, which throw an undue proportion of the body weight on to the metatarsal heads and produce a spreading of the fore part of the foot, the divergence being especially big between the first and second metatarsals, and the cramping of the toes by pointed-toed shoes and by tight stockings, together act as deforming factors.

#### Morbid Anatomy

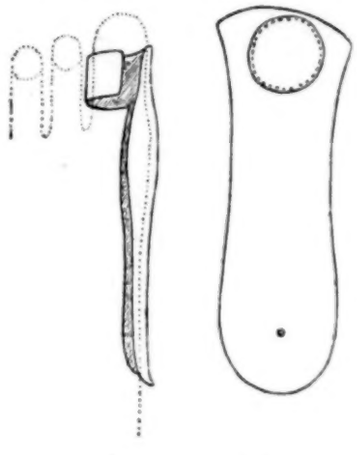
The initial change is a simple deflection of the big toe at the metatarso-phalangeal joint, with a displacement of the sesamoid bones towards the second toe, together with the tendons of the long flexor and extensor muscles. A stretching of the capsule on the medial side and a tightening on the lateral fix the deformity. Later, osteo-arthritic changes take place about the metatarsal head, while the exposure of the medial side of the head to increased friction and pressure results in the formation of a large exostosis. A bursa develops; this may later become inflamed, and so the typical bunion is formed. Osteophytes may also form on the dorsal and lateral aspects of the head, and must not be overlooked when treatment is considered. The splaying of the foot is accompanied by a dropping of the anterior arch and by the formation of callosities under the heads of the second and third metatarsals. A rotation of the great toe often occurs, so that the nail looks outwards as well as upwards.

#### The Symptoms

The condition is at first symptomless, especially in adolescents, and it is only when osteo-arthritic changes are present or when the bursa becomes inflamed that advice is sought. Pain is experienced from boot pressure on the enlarged head, though movement may still be quite painless and there is difficulty in fitting new shoes, which are only comfortable when worn into shape. Sometimes tenderness under the intermediate metatarsal heads is the first symptom. Occasionally metatarsalgic pains, which can be traced to the formation of osteophytes on the lateral aspect of the head, are the earliest complaint.

#### Early Treatment

In early cases, or when the deformity is slight, an effort may be made to remedy the defect by conservative measures. The wearing of a night splint to hold the great toe straighter, the use of digitated stockings, and the fitting of an insole with a toe post to hold the great toe separated from the second may be tried. The last is seldom acceptable, as if it is to be efficient in action it is uncomfortable. The wearing of a metatarsal support is a great help in early and late cases. It may take the form of a strong metatarsal garter with a well-filled pad fitting just behind the second and third heads if it is thought that the widening of the fore part of the foot is the primary factor in the causation of the deformity, or of an insole with a dome-shaped pad stitched to its upper surface. To give plenty of room for the toes it is best for the insole to terminate just beyond the dome and to be secured into position by nailing it through to the heel.



(i) (ii)

FIG. 1.—(i) The hallux valgus night splint. (ii) An insole with a dome one and three-quarter inches in diameter and half an inch deep in its centre.

#### Operative Treatment

In a great number of cases operative treatment becomes necessary to restore comfort in walking and to make the easy fitting of normal shoes possible. The object of the operation is twofold: first, the reduction of the bunion with removal of all excess bone, pressure on which has been the cause of pain; and, secondly, the realignment of the great toe. The former is the more important, as once the enlargement and protrusion of the metatarsal head is removed comfort is assured for many years, even though the valgus deformity remains. The first object can be secured by a trimming of the metatarsal head. The head of the bone is exposed by a dorsal or dorso-medial incision in the long axis of the great toe, extending about two inches above and one inch below the joint. This incision is preferable to a medial one, as it allows greater freedom of access to the lateral side of the head. The incision is

carried down to the periosteum, and the neck of the bone exposed subperiosteally. The soft tissues surrounding the head are then dissected off the bone as closely as possible, the periosteum and capsule forming one continuous sheet. The joint is opened and the proximal phalanx depressed downwards. The excess bone is then removed from the head with an osteotome, taking good care that enough is removed. This will involve about one-third of the head on its medial aspect and any dorsal or lateral osteophyte formation, so that in many cases the head will be whittled down to the size of the tip of the ring finger or even smaller, the end still remaining covered by articular cartilage. Only one wall of the bursa need be removed. Even though the valgus deformity is not completely corrected future comfort is assured by this procedure alone. When the valgus is excessive it may be corrected by an osteotomy of the proximal phalanx. The incision is carried a little further forward, and a small wedge of bone is taken from the medial side of the phalanx with a fine saw, as close to the joint as possible. No deep sutures are necessary, and the skin may be closed with fine silkworm-gut stitches.

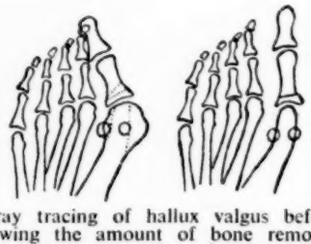


FIG. 2.—*X*-ray tracing of hallux valgus before and after operation, showing the amount of bone removed from the metatarsal head and the correction of deformity by osteotomy through the base of the phalanx.

The removal of the metatarsal head is to be condemned, and should be reserved for cases only in which there is gross destruction of the articular surface of the metatarsal. If done the foot is left seriously weakened, and an additional strain is thrown on to the second and third metatarsal heads, with an increasing likelihood of painful callosities forming under their plantar aspects. Removal of the base of the phalanx avoids these objections, but leaves the great toe shortened, and as a trimming of the metatarsal head is almost always required as well the proximity of two raw bone surfaces may lead to serious stiffening of the joint. The cap phalangectomy operation of Girdlestone seems to overcome some of these difficulties, but it is yet early to assess the ultimate value of this procedure.

### After-treatment

The after-treatment is of the greatest importance. Immediately after the operation it is my practice, following the teaching of the late Naughton Dunn, to enclose the foot in a plaster-of-Paris splint. This takes the form of a slipper, leaving the ankle-joint free and having a separate compartment for the great toe, to ensure that correct alignment is maintained. The plaster is retained for a month, or for six weeks when an osteotomy has accompanied the trimming of the head. The stitches are left in until the plaster case is removed, and after seven or eight days following the operation the patient is allowed to take full weight, wearing a slipper to protect the plaster from damp. The more active the patient becomes during this period the less swelling of the foot and stiffness in the toe-joint there is when the plaster is removed. A shoe with a straight-sided inner border and fitted with a domed insole to support the anterior arch is next worn. Faradic foot baths and intrinsic muscle exercises are helpful in restoring full function. If the longitudinal arch was weak the shoe is raised on its inner border one-sixth of an inch, and flat foot exercises are given as well.

## HALLUX RIGIDUS

Hallux rigidus occurring in adolescents may follow injury, and appears to be a synovitis of the metatarso-phalangeal joint with protective muscle spasm. Usually no change is seen radiographically, and the condition clears up with rest or with the wearing of a metatarsal bar behind the tread.

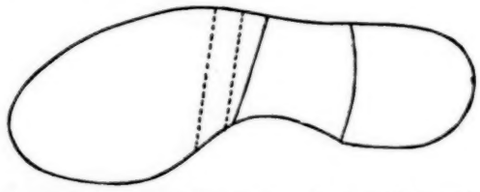


FIG. 3.—Position for fixing to the sole an outside metatarsal bar three-quarters of an inch wide and half an inch deep.

The hallux rigidus of later life is an osteo-arthritic change in which the rigidity is due to a mechanical locking of the joint, partly by the obstruction to movement presented by osteophytes and partly by a general flattening of the joint surfaces. Trauma is a frequent cause, either by the repeated stubbing of the great toe against the toe-cap of the boot or by the dropping of heavy weights direct on to the joint. The condition may be comparatively painless, or pain may be referred to the interphalangeal joint, which becomes hyperextended, with a callosity on its plantar surface, in the effort to compensate for the loss of mobility in the metatarso-phalangeal joint. The chief complaint is usually a disability in "taking off" owing to the rigid position of the toe. The rigidity of the long axis of the foot may force its owner to walk with the foot everted, and so be a cause of flat-foot. It often happens that the toe becomes fixed in plantar flexion (hallux flexus). This condition does not differ from hallux rigidus except in producing greater disability.

### Treatment

This is directed chiefly to restoring mobility, and in mild cases, and when operation is contraindicated or is inconvenient, manipulative treatment can be employed. The great toe is firmly grasped through a thin towel to prevent the fingers slipping, strong traction is exerted in its long axis and continued for a minute or so, then rotatory and lateral movements are begun in either direction, and finally the toe is strongly dorsiflexed. This manipulation is repeated several times at one sitting and is given daily. The great-toe joint is strapped with one-inch elastoplast after each treatment. The wearing of a metatarsal bar will be helpful in taking stress off the joint while movement is returning.

In most cases, however, operation will be preferred, and where rigidity arises from the blocking of movement by osteophytes and the rounded contour of the central part of the head is intact a trimming operation as described for hallux valgus may suffice. In most instances the best results will be obtained by the removal of the base of the phalanx, at least one-third of the length of the bone being excised. As in many cases of hallux rigidus the great toes are abnormally long the shortening produced by this operation is an actual advantage, and the danger of ankylosis following the approximation of the cut end of

the phalanx and the raw surfaces from which osteophytes have been removed can be avoided by fixing a strapping extension on to the toe and tying this to a wire hook fixed to the plaster case and projecting forward in front of the toe. The extension is removed in two or three weeks, after which the patient walks for another week or so in the plaster case.

FIG. 4.—*X*-ray tracing of hallux rigidus before and after operation, showing amount of bone to be removed from metatarsal head and base of phalanx.

If a trimming operation alone has been performed the plaster case is applied with the great toe somewhat dorsiflexed, so that any temporary post-operative joint stiffness is not a hindrance during convalescence. When the plaster is removed an insole with a bar instead of a dome is fitted in the shoe.

After foot operations of all kinds it has been found advantageous to fit cheap temporary shoes of a correct shape, a half or one size larger than those to which the patient is accustomed, for three to six months before returning to the normal shoes, as although the period of post-operative swelling is greatly lessened by early activity in the plaster case it cannot be got rid of altogether.

## FOODSTUFFS FOR THERAPEUTIC USE

*We have received from the Ministry of Health the statement printed below, which was prepared by the Therapeutic Requirements Subcommittee of the Medical Research Council and has been approved by the Ministry of Food.*

### Sugar in Medicines

The present national situation in relation to supplies of sugar was recently reviewed publicly by the Minister of Food, who gave reasons for the control of this commodity and for restrictions on the amount to be used. The present position requires that the supplies of sugar should be directed into the forms in which they are most useful as foods. The quantities of sugar used annually in preparing medicines are considerable, and a definite restriction in this way would be helpful to the country.

The Ministry of Food has allowed, for the time being, a full ration of sugar for medicinal purposes, but has made the concession on the understanding that considerable economies will be made voluntarily by the medical and pharmaceutical professions. Otherwise rationing will have to be introduced. This being the case, members of the medical profession are urgently requested to restrict their prescriptions, for preparations containing sugar, to those cases in which such preparations are essential.

A survey of official preparations and standard prescriptions shows that the prescribing of preparations containing sugar could be restricted almost entirely to medicines for children without any serious loss of therapeutic efficiency. An appeal is made to the medical profession generally to bear the difficulties of the situation in mind when writing their prescriptions. It is to be hoped that by voluntary effort in this way the quantity of sugar used in making medicines may be reduced, so that it will be possible to maintain the present formulae for pharmaceutical preparations. The alternative is rationing of pharmaceutical manufacturers with the consequent necessity for altering the formulae of the *British Pharmacopoeia* and the *British Pharmaceutical Codex* by removing sugar and substituting some other sweetening agent.

The alteration of official formulae is undesirable. Syrups which are used merely for flavouring purposes—orange, lemon, ginger, and possibly tolu—might well be omitted from prescriptions. Certain tonic syrups, such as Easton's compound glycerophosphates, and compound hypophosphites, could be prescribed in the form of the equivalent tablets, which are readily available.

### Citrates

Citric acid is now manufactured chiefly from sucrose by a biological method, and the necessity for the conservation of stocks of sugar has given rise to difficulty in regard to supplies of citric acid and citrates.

Prescribers would be wise to restrict their use of citric acid and citrates to cases in which they are essential.

### Cod-liver Oil

While it is understood that sufficient cod-liver oil is at present available to meet all reasonable medical requirements, it cannot be stated with certainty that this position will be maintained, and in order to conserve supplies it is clearly desirable that the strictest economy should be observed in its prescription and administration. The value of cod-liver oil can be ascribed to its content of vitamins A and D. The maximum effective daily dose of vitamins A and D is contained in about three teaspoonfuls of the oil, and no useful therapeutic purpose will be served by exceeding that dose. In most cases it is found more satisfactory and economical to administer the oil without admixture rather than in the form of an emulsion or in combination with malt extract.

Cod-liver oil provides a convenient way of administering vitamins A and D, but any edible oil containing the necessary vitamins would be satisfactory as a source of these vitamins if it were required to conform to a recognized specification. In this connexion it is understood that the British Pharmacopoeia Commission has in course of preparation, and purposes shortly to make official, a specification for a vitaminized oil containing vitamins A and D in a suitable edible oil.

### Starch and Fats

Starch, animal fats, and vegetable oils and fats are controlled by various Orders and Departments of the Ministry of Food, but special privileges have been extended to the medical and pharmaceutical professions to allow of the use of these substances for therapeutic purposes. Efforts will be made to ensure that sufficient pure leaf lard will be available for all legitimate medical purposes, but it is desirable that substitutes should be used wherever possible. Moreover, whereas early Orders prohibited the use of vegetable oils and fats for any purpose except food, permission has now been given to allow the use of any of the following oils for the purpose of the preparation of any medicine or medicament for internal and external use: coconut oil, cotton-seed oil, gingelly (sesame) oil, ground-nut (arachis) oil, linseed oil, maize oil, olive oil, palm oil, and soya-bean oil. Liquid paraffin, soft paraffin both white and yellow, and hard paraffin or paraffin wax are governed by the various Rules and Orders issued by the Petroleum Board, but for the present sufficient supplies are available for medical purposes. The medical and pharmaceutical professions, having been spared the burdensome procedures associated with rationing, should exercise every economy in all the articles referred to in this paragraph. There are few large hospitals and dispensaries, for example, in which it would not be possible to reduce greatly the consumption of liquid paraffin without detriment to the patients.

# STERILIZATION OF SYRINGES AND NEEDLES

BY

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AND

H. J. PARISH, M.D.

Our paper on inoculation technique (*Journal*, January 20, p. 79) and our letter (February 17, p. 279) have given rise to considerable comment and more than one request for practical suggestions for the improvement of methods. In reply, while it is difficult to give precise directions which will be acceptable to everybody, there are certain general principles of technique which should be kept constantly in mind—namely:

1. Every medical man should have two sets of syringes—one for the injection of therapeutic products into healthy tissues, and the other reserved solely for the withdrawal of pathological fluids. The suggestions which we offer in this article are based on the assumption that there will be no departure from this fundamental requirement and that the two sets will be readily distinguishable.

2. When syringes and needles have been sterilized, "droplet" infection from the patient or attendants should be avoided, as well as contamination by unsterile hands or dressings.

3. The best and simplest means of sterilizing syringes is by heat, as the ideal antiseptic solution for this purpose is not yet available.

### Syringes for Inoculations

In clinics, hospitals, etc., where large numbers of inoculations are carried out, syringes and needles should be placed, while still wet, in suitable containers (for example, test-tubes with parchment covers) and sterilized by steam under pressure in a properly controlled autoclave. Each syringe should be filled only once from the bottle of serum or other product, and if more than one inoculation has to be made from the contents of the syringe a fresh sterile needle should be used for each patient. When empty the syringe should be resterilized and a fresh sterile syringe and needle used for the next withdrawal from the bottle. The risk of infecting multiple-dose containers is thus minimized.

The general practitioner will find the above procedure impracticable unless he has ready access to an autoclave which is adequately supervised. He can, however, use the following method (or some such modification of it as we suggest), which falls short of the ideal but will rarely fail to protect the patient from the risks of infection. Our preference is for boiling syringes and needles, *immediately before use*, for fifteen minutes or longer in water, or, still better, in 1 per cent. phenol, the syringes being emptied completely before being filled with the inoculum. This treatment will destroy all vegetative forms of bacteria, but not necessarily all spores. Stronger solutions of phenol may cause irritation and should not be used. Certain types of syringe can be assembled and then boiled, without risk of breaking, and this procedure reduces the chances of contamination. In all boiling operations the sterilizer should be covered with a lid. It is a good plan to sterilize with the syringes and needles test-tubes of appropriate size, in which the assembled syringes and needles can be placed on the table and so protected from "droplet" infection while cooling and also between injections.

Practitioners will rarely be prepared to wait for upwards of fifteen minutes for the sterilization of syringes and needles on their round of visits, and therefore the following modification is suggested, the first essential being adequate equipment. The lid of the metal case of each syringe should be removed, and the lid and the case itself, holding the barrel, plunger, and needles in separate clips, should be boiled, as previously recommended, for at least fifteen minutes in 1 per cent. phenol. After boiling, the water in the case should be drained off and the lid replaced. Where a number of injections have to be given on the doctor's round, several syringes may be sterilized in this way before he leaves home. At the bedside the barrel and the plunger are taken from their respective clips and assembled with hands which should be sterilized if possible. (With suitable types of metal case, this operation may be performed immediately after each syringe has been boiled in the doctor's surgery; after barrel and plunger are fitted together they are inserted into the barrel clips and the lid of the box replaced.) The needle should be withdrawn from its holder by the shoulder and fitted to the nozzle of the syringe, care being taken not to touch the end of the nozzle during the operation. A pair of forceps may be boiled with the syringes, carried in one of the boxes, and used for fitting the needle to the syringe at the bedside. Incidentally, the life of most needles is short on account of blunting of the point and rusting. Needles should be of best-quality stainless steel, kept sharp and renewed frequently. An alternative suggestion for sterilization is that a stout test-tube with a rubber cork or rubber cap should be sterilized with each syringe, and that syringe and needle should be assembled in the doctor's surgery and carried in the test-tube. The needle may be protected by a small piece of glass or rubber tubing at the bottom of the test-tube. Practitioners who wish to adopt this method are warned of the dangers of plugging the tubes with unsterile wool, and also of replacing a used syringe in the container and confusing the outfit with another sterile one.

Private practitioners have not the same facilities as hospitals and clinics for proper sterilization technique, and it is advisable for them to use single-dose instead of multiple-dose containers of biological products, as there is always some risk of contaminating the latter.

### Syringes for Withdrawal of Pathological Fluids

Usually the remains of the exudate left in the syringe after ejection of the bulk of the material is got rid of by repeatedly drawing up water to fill the barrel of the syringe and ejecting each filling into some strong antiseptic solution in order to destroy any organisms present. The vegetative organisms remaining in the syringe *might* be killed by weak antiseptics or brief exposure to boiling water. Even if the proteins in inflammatory exudates are coagulated during the process of sterilization, boiling may still be effective, but chemicals may not penetrate the coagulum, so that some organisms contained therein may survive the treatment. Resistant sporing organisms may also occasionally be present. The impossibility of guaranteeing the sterility of infected syringes and needles treated by boiling or by ordinary "contact disinfection" with various chemicals—for example, alcohol, ether, thymol, lysol, or phenol, or mixtures of these—must therefore be realized. It has been suggested to us that a mixture of phenol and alcohol might be used for the treatment and storage of syringes, but alcoholic solutions of phenol have very little antiseptic action, and the germicidal power of phenol in watery solutions diminishes as alcohol is added. An aqueous solution of phenol is an efficient germicide, but it is not generally remembered that exposure for several days to a 5 per cent. solution at room temperature is necessary to kill the spores of certain bacilli. Boiling in 5 per cent. phenol is much more rapidly effective than immersion in the antiseptic at room temperature, but boiling for several minutes may be necessary to kill all resistant spores. When autoclaving of contaminated syringes is impossible, we therefore recommend that these should be thoroughly washed as described above and then *boiled for half an hour or longer in 5 per cent. phenol*. Care should be taken that the solution comes in contact with every part of the syringe and needle. This treatment may leave in the syringe sufficient phenol to interfere with the bacteriological examination of pathological fluids collected subsequently. The syringe should, therefore, be boiled for fifteen minutes in water before it is used for the aspiration of fluids which are to be sent to the laboratory for examination—for example, bacteriological or biochemical.

Syringes should never be rinsed in supposedly sterile water; stored water should not be regarded as sterile unless it has been hermetically sealed in a glass container immediately after sterilization. Even in some hospitals it is believed that water once sterilized remains sterile indefinitely under any conditions of storage!

### Insulin Syringes

Dr. R. D. Lawrence (January 27, p. 150; and March 2, p. 366) has made out a case for the use of spirit containers, and for some compromise with regard to "sterilization" of both syringes and containers in daily use by himself and his patients. The bactericidal action of a solution containing 70 per cent. of ethyl alcohol is much greater than that of industrial spirit, 95 per cent. alcohol, to which Dr. Lawrence refers. As even 70 per cent. alcohol is an unsatisfactory antiseptic, patients should be instructed to change it from time to time, possibly once or twice a week, when the container itself and the syringe should be boiled. Ordinary insulin solution is acid and is therefore in a somewhat different category from other products, but if protamine-zinc-insulin is used it should be realized that there is greater risk of infection, and measures of cleanliness and "sterilization" should be more thorough. Each patient usually has his own syringes, however, and if he neglects personal cleanliness and the methods recommended by his doctor, any sepsis, trifling or otherwise, which results affects himself alone and not a number of patients injected subsequently with the same contaminated syringe. If an abscess does occur, it will be well for the doctor's peace of mind if he can indicate to his patient that his instructions have not been carried out.

## PHARMACY AND POISONS ACT, 1933

Attention is drawn by the Home Office to the Poisons List (Amendment) Order, 1940 (S.R. and O. 1940, No. 453) and the Poisons (Amendment) Rules, 1940 (S.R. and O. 1940, No. 452), which were made by the Secretary of State on March 29, 1940, and came into operation on April 1.

The Order and Rules amend the definition of sulphanilamide derivatives contained in the item "Para-aminobenzenesulphonamide" which was added to Part 1 of the Poisons List by the Poisons List (Amendment) Order, 1938, and to the First and Fourth Schedules to the Poisons Rules, 1935, by Rules 5 and 7 respectively of the Poisons (Amendment) Rules, 1938; the amendment consists in the replacement of the words "derivatives of para-aminobenzene-sulphonamide having one or both of the hydrogen atoms of the para-amino group substituted by other radicals" by the words "derivatives of para-aminobenzene-sulphonamide having any of the hydrogen atoms of the para-amino group or of the sulphonamide group substituted by another radical."

Sulphonal and alkyl sulphonals are now included in the First Schedule.

A further amendment to the First Schedule exempts dentifrices containing less than 0.5 per cent. of acetarsol from the special restrictions applying to substances included in the First Schedule. An addition has been made to the Special Exemptions in Group II of the Third Schedule to the Poisons Rules to exempt from all control under the Act and Rules chlorides of antimony contained in polishes.

Copies of the Order and of the Rules may be bought (price 1d. each), directly from H.M. Stationery Office at the following addresses: York House, Kingsway, W.C.2; 120, George Street, Edinburgh, 2; 26, York Street, Manchester, 1; 1, St. Andrew's Crescent, Cardiff; 80, Chichester Street, Belfast; or through any bookseller.

A Society of the History of Medicine has recently been founded in Peru. Its aim is to further the progress of medical history, especially that of Peru, and to cultivate relations with foreign countries, especially France. Several French medical historians have been elected honorary members of the new society.

# Local News

## SCOTLAND

### Pooling of Scottish Ambulances

Arrangements involving the pooling of ambulances in Scotland were made at a conference in Edinburgh on March 12. The conference, which was called by the Department of Health, was presided over by Mr. W. R. Fraser, secretary of the Department, and was held to consider how to make the best and most economic use of the various ambulance services in Scotland. It was attended by representatives of the St. Andrew's Ambulance Association and the British Red Cross Society, and of the Navy, Army, and Royal Air Force. It was agreed that ambulances controlled by the Department and by the two organizations should be pooled in such a way that, subject to local needs and to certain reservations due to prior understandings, they would be sited in the places where they are most likely to be required, and would be made available to deal with any demands for ambulance transport for sick and wounded of the fighting services and for civilian air raid casualties. The Department undertook to investigate and advise as to the probable needs of the various districts in Scotland and to frame proposals for consideration at a further meeting.

### Glasgow Health Report

The annual report for 1938 of the medical officer of health, city of Glasgow, deals with a population estimated at 1,127,825 persons, inhabiting 280,561 houses. The general death rate of 13.3 per thousand is the lowest yet recorded. This is chiefly attributable to a marked fall in the deaths due to pneumonia and respiratory diseases. Deaths from heart disease were also less numerous. With regard to infectious diseases, scarlet fever showed a decrease in the number of cases, but diphtheria was more prevalent than it has been since 1927. In the enteric group fifty-seven cases were verified, twenty-eight as typhoid and twenty-nine as paratyphoid B. Six cases of the latter occurred in the surgical ward of a hospital. When the first cases had been diagnosed there was nothing to indicate the source of infection. Following thorough examination of all patients, nursing staff, and ward maids, it was found that one patient, a woman of 55 who had been admitted for pyloric obstruction, showed a strongly positive reaction to *B. paratyphosus* B. She had no symptoms, and temperature and pulse were normal. This patient was removed to a fever hospital, where paratyphoid B bacillus was subsequently obtained from her urine. Three cases of anthrax in human beings occurred during the year. Two of these were among the employees of a firm which manufactures animal fertilizers and foodstuffs from raw materials imported from India. Over a month elapsed between the two cases, each of which developed a typical malignant pustule on the forearm. Both patients made a rapid and uneventful recovery. Despite full investigation the source and manner of infection remained undiscovered. The remaining case was that of a woman worker employed as a twister of hair with a firm of bedding manufacturers. The material used was horse and hog hair imported from South America and U.S.A. In this case the left side of the face was the site of infection.

### Central Midwives Board

At the last meeting of the Central Midwives Board for Scotland Professor R. W. Johnstone, M.D., F.R.C.S.Ed., F.R.C.O.G., and Professor James Hendry, M.B., F.R.F.P.S.G., F.R.C.O.G., were elected chairman and deputy chairman respectively for the ensuing year. The Board appointed examiners, and approved, subject to inspection, certain training institutions, with the teachers attached thereto, for the training of pupil midwives.

# ENGLAND AND WALES

## Wartime Welfare Centres

The Queen paid a visit recently to the Kensington first-aid post in Addison Road, at which an infant welfare centre has been established. Five of Kensington's eight welfare centres were closed after the evacuation of mothers and children last September, but one was reopened shortly afterwards, and two more were reopened in January within the premises of first-aid posts near the original centres. Precautions have been taken to ensure that there will be no interference with the primary duty of the post, none of the rooms in which first aid will be given being used for welfare purposes. Should a raid occur during a session the mothers and children will leave the post for an adjacent shelter. This combination of A.R.P. and maternity and child welfare is an ingenious solution of a double problem—namely, the lack of staff to deal with the normal peacetime work among the mothers and children who have returned to London and employment for the large number of A.R.P. personnel who have been kept in enforced idleness owing to the absence of air raids. The A.R.P. staff are now fully trained in their duties and anxious for fresh activities. The temporary accommodation of welfare centres at first-aid posts has the advantage of economy in heating, lighting, and rent, and increases the staff available for the welfare sessions by the health visitors attached to the post, assisted by the A.R.P. personnel, who are helping the work with enthusiasm, thus gaining a useful insight into the health services. At the end of her visit the Queen congratulated Dr. James Fenton, the medical officer of health, on the success of the scheme.

## Civil Nursing Reserve Changes

The Minister of Health has decided to incorporate the headquarters organization of the Civil Nursing Reserve in his Department, and to replace the Central Emergency Committee by an Advisory Council under the chairmanship of Miss Florence Horsbrugh, Parliamentary Secretary to the Ministry. The local emergency organizations will remain unchanged. It is also announced that a regional nursing officer is being appointed for each of the eleven Civil Defence Regions into which England and Wales is divided. Each officer will have had administrative experience in addition to her qualifications as a State-registered nurse, and her duty will be to keep in touch with medical officers of health and local emergency committees and generally to supervise the emergency nursing services of the region. Eight appointments have so far been made, and five of the new nursing officers have already been assigned to their regions.

## Research on the Problems of Water Supply

The Department of Scientific and Industrial Research has opened a new water pollution research laboratory at Watford equipped for work on the problems of water supply, sanitation, and the recovery and utilization of valuable materials from trade effluents of many kinds. On the outbreak of war plans for building a special research station for work of this nature, which is carried out under the general guidance of the Department's Water Pollution Research Board, were well advanced, but it was decided to postpone them and to secure temporary accommodation to meet the immediate needs of the work, which are likely to increase under war conditions. Suitable premises have been obtained, and inquiries and other communications intended for the director of water pollution research should henceforth be addressed to the Water Pollution Research Laboratory, Langley Road, Watford, Hertfordshire. The staff of the laboratory, in co-operation with the Building Research Station, has already been largely responsible for designing improved and less costly sanitary equipment for air raid shelters. Quite a small saving in the cost of such equipment throughout the country represents many times the cost of the new laboratories. Although no central research station has hitherto been available for the work of the Water Pollution Research Board arrangements have been made for many investigations to be carried out in the last few years, on behalf of the Board, in other laboratories, which have led to important results. In addition to special investigations, assistance has been given in response to numerous inquiries from organizations and individuals by indicating methods of dealing with problems of water supply, sewage disposal, and the treatment and disposal of trade effluents.

## Treatment of Persons Blinded in Air Raids

The Minister of Health has arranged with St. Dunstan's for any civilian casualties who may become blind as a result of war injuries to have the advantage of the special facilities available at the St. Dunstan's Hospital near Brighton, payment being made by the Ministry under the emergency hospital scheme. Hitherto these facilities have been available only for Service patients. The question of extending the accommodation at the St. Dunstan's Hospital to meet the increased demands which the new service may entail is being explored. The new arrangements provide for the transfer to St. Dunstan's, after any necessary immediate treatment at the hospital to which he is first admitted, of any civilian who has been blinded or is thought likely to become blind as a result of enemy action. At St. Dunstan's he would receive surgical treatment and such immediate rehabilitation as requires medical supervision. The further rehabilitation and re-education of non-Service cases will continue, as at present, to be the responsibility of the other voluntary organizations dealing with the blind and of the local authorities.

# INDIA

## The Haffkine Institute, Bombay

In 1938 there was a valuable extension of the work of the Haffkine Institute, an entomological department being created under the care of Dr. M. Sharif, who has done considerable research on fleas. The director of the Institute, Lieutenant-Colonel S. S. Sokhey, I.M.S., in his report for 1938 states that a small outbreak of plague at Bettiah, Bihar, permitted a field trial of the anti-plague serum prepared at the Haffkine Institute, 124 cases being dealt with. Each alternate patient admitted was treated with the serum, while the remainder received intravenous injections of iodine solution. No selective method was employed. Administration of the serum produced striking clinical improvement with the disappearance of toxic symptoms, the percentage mortality being lower than that following the use of other anti-plague sera. It is held that the careful laboratory work on the preparation of the Institute's serum has given a brand of high curative value. The relative protective powers of agar and broth vaccines are being investigated, and experiments are also being conducted to increase the growth of the organism in broth cultures, since the protective power of a broth vaccine incubated at a suitable temperature depends on the number of the organisms growing in the medium. During the year there was a sudden increase in the incidence of typhoid fever in Bombay, and the Institute investigated the outbreak in collaboration with the municipal health authorities. The laboratory aid in the diagnosis of cases was found particularly valuable by the general practitioners, and the notification rate was improved. The Provincial Government is devising a permanent scheme to make this laboratory aid available to medical practitioners free of charge. The potency of the T.A.B. vaccine issued by the Institute was found to be very high against all strains of known virulent typhoid bacilli. A new group of bacilli were found to be associated with sprue and pernicious anaemia. These bacilli were strongly haemolytic and capable of producing hydrogen sulphide in their litmus milk cultures. They could thus be differentiated from the colon bacilli which are normally found in the intestines, as well as from typhoid and dysentery bacilli. In view of the general belief that sprue and pernicious anaemia are caused by dietary deficiency it has been suggested by the workers at the Haffkine Institute that the changes produced by this deficiency in the gastro-intestinal tract allow the bacilli of the new group to survive in the tract.

# Correspondence

## Treatment of War Wounds and Infected Fractures

SIR,—My attention has just been called to a letter in your issue of February 10 (p. 229) by Mr. E. J. Moynahan. It is perhaps unnecessary for me to add to explanations of the open-wound–closed-plaster method if it has already been discussed by Mr. R. Watson Jones and others in your columns. There are one or two points, however, which will make some difficulty until there is uniform adherence to all the fundamentals involved in the application of the method. It is true that under war conditions there will always have to be a certain amount of compromise with our ideals in regard to the handling of these patients. If it is remembered, however, that fixed traction in full length for a compound fractured limb, control of haemorrhage by pressure or tourniquet, and protection of the wound against further infection are the objectives at whatever time and under whatever circumstances the patient is seen, much better results will be obtained. So much along this line was accomplished in the last war by the use of the Thomas splint that we need to go only a little further to make results much better than they have been with various methods still being employed.

The objections of M. Mathieu of the danger of oedema from constriction may be entirely dismissed if length and immobilization are obtained. We have no difficulty about oedema or swelling if circulation and nerve supply are restored to the limb by an approximate restoration of full length and reduction of the fracture at the first treatment. The objection that we cannot observe the wound is not an objection at all. A principal object of my method is to protect the wound surface against exposure for inspection, dressings or otherwise. If the fracture and the limb have been restored to approximate anatomic relationship, and if the open wound has been protected against secondary infection, natural drainage will do the rest. The danger of gas gangrene is eliminated in the same way. Open wounds do not have gas gangrene. If they are closed by sutures, and if we depend for drainage upon rubber tubes or other kinds of wicks, gas gangrene will occur frequently and will be a constant source of danger.

Dr. Trueta's experience and his results are so well explained by his book that almost any surgeon can follow him without difficulty. The immediate application of plaster cannot, of course, always be done, but compromises will not create extraordinary difficulty if fixed traction in correct position can be obtained and maintained in a Thomas splint in the meantime.

Finally, I have heard from what the newspaper writers call "reliable sources" that some of the Spanish patients were amputated in the South of France after their difficult journey from Barcelona. Many of the patients were those in whom complications arose on account of the haste in which they departed from Spain and because of their terrific hardships before arriving at hospitals in the South of France. I am sure the French surgeons will be willing to make some allowance for a method which had been subjected to such difficulties as my (approximate) method was in these patients.—I am, etc.,

Lincoln, Nebraska, March 8. H. WINNETT ORR, M.D.

## The Role of Light Armour in Modern Warfare

SIR,—This letter is provocative, and written in the hope that it will elicit the criticism of colleagues with experience of war and its surgery. Such criticism as it receives will be of assistance to me either in getting rid of a bee that has been buzzing in my bonnet for over thirty years, or in bringing to the notice of the authorities the ideas to be set forth. In either case the result will be good.

In order that the following may be understood it must be explained that during the last two years of the late war I was occupied touring the Third Army front, studying such questions as the early treatment of wounds, the combating of surgical shock, methods of transporting the wounded back to the C.C.S., and the possibility of carrying out transfusion in the regimental aid-post. This provided a unique experience of front-line conditions. Among the interesting points noted was the large number of men who died in the trenches as the result of being hit in the front of the chest by tiny fragments of grenades or shell that ripped open some large vessel with a rapidly fatal result. Roughly speaking, the most fatal area corresponded to that part of the chest covered by the box-respirator when carried in the alert position. Impressed by the wastage of life, and remembering how many men had been saved by the steel helmet, I forwarded to G.H.Q. a memorandum in which I suggested that a pocket might be made in the box-respirator into which could be slipped a steel plate. By curving the plate to the chest and adding a suitable fastening, the plate could be attached when not in use to a wooden handle so as to serve as a handy entrenching tool. The idea was that these plates should form part of trench equipment and be used by sentries and men in exposed positions. It was not surprising that this memorandum finally came to rest in a pigeon-hole in the Ministry of Munitions, where it would have remained till the end of the war but for the intervention of coincidence. A personal friend of mine, the late Arthur Asquith, happened to be made Controller of Trench Warfare Supplies, and burrowing in his new office he came across the said memorandum. Thinking there might be something in it worthy of consideration, he showed it to his chief, Winston Churchill. The immediate sequel was a wire recalling me from France to work at the Ministry as Expert in Light Armour to the Forces. As the war seemed on the point of finishing, and I remembered that it had taken two years of agitation to induce the military authorities to accept the steel helmet, I declined the honour that had been conferred on me and returned to my Field Ambulance.

But the same question now crops up again. Having accepted the principle that it is worth while protecting the head from projectiles of comparatively low penetrating power, is it not advisable to extend this principle to other and even more vulnerable areas of the body? It is, of course, manifest that no armour that a man can support will render him immune to missiles travelling with the momentum of a bullet, and that mobility must never be sacrificed to protection. A perusal of the records of the wounded arriving at the C.C.S. during the last war shows, however, that 60 per cent. were put out of action by projectiles other than the bullet: shell and trench mortar splinters, 58.51 per cent.; bombs and grenades, 2.19 per cent.; bullets, 38.98 per cent. It would therefore be an error to allow our policy to be dictated entirely by the impracticability of affording protection against machine-gun fire, more especially since in this war the percentage of wastage from bombs is likely to be even higher than in the last one. It is not, of course, claimed that light armour would necessarily protect a man from bomb splinters, since some of these travel at a very high velocity. All that is asserted is that a certain (at present unknown) percentage of men would be saved from dying as the result of a splinter of low penetrating power entering a vital and highly vascular area like the precordium. It is noteworthy that there is a great disproportion between the numbers of chest wounds seen on the field of battle and admitted into the C.C.S. Sauerbach found that out of 300 dead on a battlefield 112 (37 per cent.) had chest wounds, and Löffler gives a somewhat similar figure of 29 per cent. Yet at No. 8 C.C.S. at Bailleul during the years 1915 and 1916 only 3 per cent. of chest wounds were admitted. This supports my own observation that the vast majority of chest wounds die from haemorrhage in the trenches, many as the result of the entry of a comparatively small projectile that even might have been stopped by a luckily placed cigarette case.

It is indeed surprising to me that, encouraged by the experience of the helmet, no attempt has been made by medical and military authorities to extend a limited protection to other selected areas. It has, of course, been objected that incomplete protection may constitute an additional danger through mushrooming or through the plate fracturing and portions of it being carried into the body. But so far as the precordium is concerned this is only a theoretical objection, since a penetrating wound in this area is in any case almost

certain to prove fatal. It is indeed only in Germany that a real interest has been shown in armour. So long ago as 1916 light breastplates extending over the upper abdomen in a series of overlapping bands, somewhat reminiscent of the lobster, were found in captured trenches. Duralumin suits (they were not made of duralumin, which has a very poor resistance) were also reported to be in use at the beginning of this war. The German is not such a fool as to imagine that he can protect himself in this way against machine-gun fire. Either he has the same bee in his bonnet as myself, or he has found it worth while to experiment along the lines that are being indicated. Nowadays there exist many alloys and even fabrics (the Dictators know all about them) that offer a high resistance to projectiles. In any case I maintain that even if the proposals I have put forward prove impracticable they are worth considering. It is for this reason that I am venturing to take up so much space in the correspondence columns of your *Journal*.—I am, etc.,

London, W.1, March 27. KENNETH WALKER.

## Ambulant Treatment of Peptic Ulcers

SIR,—In his letter in your issue of March 23 (p. 507) Dr. Ferriman expresses a number of opinions with which everyone will probably agree. In suggesting that there was an element of danger in the acceptance of his plea for ambulant treatment, I stressed that this danger lay in his standard for lack of success, which was little or no *x*-ray evidence of healing at the end of a year. The danger to life from haemorrhage or perforation is small, that from development of ulcer-cancer is probably small; the more insidious danger—that, in the experience of some, the longer an ulcer remains untreated, or unhealed by treatment, the more prone it is to relapse at a later date—is one to which serious thought should be given. In my own cases this point has been one of considerable importance and is the principal reason for my former letter.

No one will deny that if a patient refuses to be, or is unable to be, treated properly he or she must be treated in some less ideal way. Neither in peacetime nor in the first four months of the war did I find any difficulty in obtaining hospital accommodation for ulcer cases if my own beds were full. I do not agree with the suggestion that it is not the fault of the physician if beds are not available. He is able to refer cases to other hospitals and, better still, to refer the many cases whose family affairs permit it back to their general practitioner's care, with the requisite suggestions for treatment and instructions to return in a set period for re-examination.

The suggestion that the adoption of ambulant treatment will increase the number of those treating themselves for indigestion is, as Dr. Ferriman says, quite hypothetical. I did not, however, make this suggestion, but stated that many were guilty of this folly on the strength of non-medical advice and their self-made diagnosis.—I am, etc.,

London, W.1, March 26. J. C. HAWKSLEY.

## Peptic Ulcer in the Services

SIR,—Dr. Izod Bennett raises an important question in his letter dealing with peptic ulcer in the Services in your issue of March 16 (p. 458). In view of the importance of the problem the Royal College of Physicians asked me, together with Dr. Charles Newman, to investigate and report upon the gastro-duodenal cases invalided to this country from France, and at present in the sector, military, and other hospitals. These investigations have been proceeding since the early part of the year, and it would be inopportune for me to say more than that this clinical material is being systematically investigated. There are, however, two comments I would like to make.

The first of these arises out of Dr. Izod Bennett's criticism of the view that surgery is likely to render recruits suffering from peptic ulceration fit for service. In the course of visits to many hospitals during this investigation and the opportunities for discussing the problem with physicians, surgeons, and medical officers, I have heard nothing of this advocacy of surgery. In fact my experience has been in exactly the opposite direction. For a variety of reasons surgery is often being deliberately avoided even in cases in which I am sure Dr. Izod Bennett would agree that there are definite indications for surgical intervention.

Secondly, there is no doubt that these (and other) cases are not, under the prevailing system of hospital administration, being investigated with the same detailed care as in peacetime. In a disease such as gastro-duodenal ulceration, and in the various types of gastritis and dyspepsia, we are largely dependent on the patient's subjective symptoms, and there is a very strong case for the most detailed investigation. The absence of these detailed investigations is fraught with many obvious risks, and I am well aware of the conditions which have necessitated this limitation. Dr. Rudolf Schindler has stressed the importance of gastroscopic investigation in gastric disease in the Army (*Journal*, February 17, p. 243). The frequency of gastro-duodenal disease needs no stressing, whether in consulting, hospital, or general practice, and the incidence is reflected in the ubiquitous advertisements of proprietary alkaline remedies. The evidence also suggests that this group of diseases is bound to be a much greater problem than was the case during the last war. At the same time the gastric sheep may often look at first sight remarkably like the gastric goats, and separation may be possible only after the most careful scrutiny.—I am, etc.,

REGINALD T. PAYNE,
London, W.1, March 29. M.S., M.D., F.R.C.S.

## Local Use of Vitamin A in Ophthalmic Conditions

SIR,—I have just read with much interest the annotation in the *Journal* of March 2 (p. 354) about the use of vitamin A for superficial eye complaints, in which you mention my name (but wrongly spelt) in connexion with the use of cod-liver oil for mustard-gas keratitis. In July, 1936, the *British Journal of Ophthalmology* published a short paper from me, written six months previously, in which I described the effects of the oil on all the conditions now mentioned by Dr. de Grósz, but pointing out that in the case of ulcus serpens (hypopyon ulcer) the oil should be used with caution, as if used in the early sloughing stage the rapid growth of epithelium was liable to convert the ulcer into an abscess.

The statement that vitamin A is apparently the curative agent is interesting, but I think there must surely be other factors. Anyhow, in practice there is no need for any complication such as accurate dosage of international units, for any sixpenny bottle of cod-liver oil will supply efficient treatment for a number of eye cases, and I do not think that we found much difference in result between it and the richer vitamin content supplied by the more expensive halibut-liver oil.

I hope your article will lead to more general use for ophthalmic purposes of this very valuable and simple remedy, and among these uses I suggest it should displace the castor-oil drop bottle usually found on anaesthetists' tables.—I am, etc.,

Hoylake, March 28. EDGAR STEVENSON.

*** We apologize for wrongly spelling Dr. Stevenson's name.—ED., *B.M.J.*

## Prevention of Mulespinners' Cancer

SIR,—Most general practitioners, particularly those working in industrial practices, very rapidly appreciate the futility of the almighty bottle (tablet, capsule, or injection) in their attempts to overcome a health problem if the aetiological factors related to the problem remain untouched. There are many, I know, who are finding that years of peripheral "shot-in-the-dark" therapy are not very well spent without some central action to facilitate or intensify their work. In this connexion it is perhaps time for the Industrial Health Research Board to translate their findings into practical action.

I will exemplify with the problem of mulespinners' cancer. Lay observers, medical observers, research workers, oil technologists, mill operatives, and mill managers all agree that the principal aetiological factor in this type of disease is the

degree of carcinogenicity of the oil used in the mulespinning machine. I am informed, moreover, that the cost of "good" is not appreciably more than that of "bad" oil. Why, then, is bad oil allowed to be used?

I would suggest (since there is a demand nowadays for constructive criticism) that the medical profession urge the cotton industry to eliminate the purchase of dangerous oils—voluntarily. If this is ineffective the medical profession should ask for legislation designed "to prevent the use in mule-spinning and allied industries of oils which are of high carcinogenicity."

There is surely no need to delay the eradication of cancer because the "cause" has not yet been determined *in vitro*. Scurvy was eradicated before ascorbic acid was identified.—I am, etc.,

Kearsley, Lancs, March 23. D. OCKMAN.

## Unsafe Milk at School

SIR,—I was interested in the article on a mild epidemic of undulant fever by G. W. Elkington, G. S. Wilson, Joan Taylor, and F. Fulton in the *Journal* of March 23 (p. 477). The most interesting feature to me was the fact that the school authorities thought fit to change over from a tuberculin-tested milk supply to an ungraded one without pasteurizing the milk. It has been pointed out in your correspondence columns on numerous occasions during the last few years that even T.T. milk is unsafe, and a considerable body of medical opinion advocates that it should be pasteurized.

The fact that this large public school should have changed over to ungraded unpasteurized milk, the exact source of which was not even inquired into, is to me a disclosure which must cause uneasiness in the minds of parents who have boys at public schools. Such a change should have been approved, one would have imagined, by their medical officer.—I am, etc.,

Cheadle Hulme, Cheshire, March 26. NICHOLAS CRAIG.

## Work of Medical Boards

SIR,—Many besides members of medical boards must have been interested in the valuable article by Dr. D. G. Greenfield in your issue of February 24 (p. 311). As No. 1 Examiner on these boards I am more especially concerned with the duties allocated to that particular individual. In addition to testing the vision, these include an investigation into "the mental condition, nervous stability, and previous health of each man," with an examination of the "nerve reflexes, especially the reaction of the pupils, knee-jerks, ankle-jerks, and plantar reflexes. He [the examiner] will also employ Romberg's test." (I quote from the official instructions.)

As an astonishingly large number of recruits exhibit visual defect of one degree or another it will be gathered that the opportunities for detailed investigation of the nervous and especially the mental condition of the examinee are, to say the least of it, limited. Cases of actual psychosis are in the nature of things rare, and if the man's mental state is not such as to preclude his appearance before the board a report from his own doctor is usually forthcoming. Epileptics, on the other hand, are fairly frequent, but here again corroborative medical evidence is usually available at the time of examination or the case can be deferred until it is procurable. On the other hand, the type of case comprised under the vague term "neurasthenia" or "psychasthenia" provides a little more difficulty. This class includes anxiety cases, individuals exhibiting egocentric and introversion characteristics or emotional instability, schizoid personality types, cases of compulsion neurosis, etc. The characteristic mental reaction may declare itself at the time of examination, and quite often one will be told that the examinee "has never had many friends," did not play games, was not a good "mixer," etc. Such a history bodes ill for a future adaptation to military life, and in my opinion these cases should be unhesitatingly placed in Grade IV, as under the most favourable conditions they are not likely to make efficient soldiers. Here, too, supplementary information on the part of the examinee's own doctor is particularly valuable and may well prove the deciding factor.

Mental deficiency is met with fairly frequently, and considering the variety of human material encountered at the medical boards, ranging in intellectual status from the casual labourer to the university graduate, this is scarcely surprising. Low-grade mental defect is self-evident, but the higher grades of mental defect may easily be missed. Difficulty in reading the letters of Snellen's test types often puts one on the scent. Frequently one finds that the man cannot read at all and that he is generally illiterate. Further inquiries may elicit the fact that he was "a poor scholar," that he never earned an average wage, or even that he formerly attended a special school for mental defectives. Quite often slowness or apparent stupidity in carrying out the routine tests, such as the limb movements required by Examiner No. 3 or the exercise-tolerance test, provides valuable corroboration as to the mental status. With regard to nomenclature, if the term "mental deficiency" is found to be too damnatory one might suggest the more euphemistic "mental subnormality," even when the case is one of mental defect "within the meaning of the Act."

The term "cerebral dysfunction" suggested by Dr. J. Attridge Williams in his letter in the *Journal* of March 9 (p. 416), with its implication of the faulty functioning of an erstwhile normal brain, would seem to be a definite misnomer, for whatever mental deficiency is it certainly is not that. Nor would such a term differentiate it from any other form of mental impairment. But perhaps this is to be hypercritical, and Dr. Attridge Williams might reasonably retort that diagnosis as such is not the primary business of the medical boards, in which event I should scarcely be disposed to disagree with him.—I am, etc.,

J. E. MIDDLEMISS,
Leeds, March 25. F.R.F.P.S.G., M.R.C.S.

## Condition of Evacuated School Children

SIR,—In December last I had the opportunity of examining 1,400 school children who had been evacuated from the East End of London to a rural district in Essex. Over 1,300 came from two adjacent boroughs. Attention was paid to certain points: the general nutrition, cleanliness (freedom from infestation), presence of impetigo and scabies, clinical anaemia, carious teeth, and visual defects. It is perhaps worth recording that only 2 per cent. apeared to be in need of extra nourishment; 10 per cent. were infested with head lice, 3 per cent. had impetigo, 1/2 per cent. only had scabies when inspected. Clinical anaemia, by which I mean pallor of the mucous membranes, was present in a high percentage of cases. It was more marked in girls than boys.

*Anaemia*

| | Less than 5 yrs. | 5-8 yrs. | 8-11 yrs. | 11-14 yrs. |
|---|---|---|---|---|
| Male .. .. | — | 32 per cent. | 30 per cent. | 26 per cent. |
| Female .. .. | — | 49 ,, | 47 ,, | 33 ,, |
| Total .. | 31 per cent. | 40 per cent. | 38 per cent. | 29 per cent. |

*Incidence of Dental Caries*

| | Less than 5 yrs. | 5-8 yrs. | 8-11 yrs. | 11-14 yrs. |
|---|---|---|---|---|
| Slight caries .. | 13 per cent. | 17 per cent. | 18 per cent. | 18 per cent. |
| Severe ,, .. | 10 ,, | 17 ,, | 15 ,, | 8 ,, |
| Total .. | 23 per cent. | 34 per cent. | 33 per cent. | 26 per cent. |

Vision below 6/12 was present in 6 per cent. of the children between 8 and 11 years and in 5.5 per cent. of those between 11 and 14 years. A lesser degree of visual disability (6/9 in one or other eye) was roughly twice as common in the same age groups—12 and 10 per cent. respectively.

Before a second evacuation is carried out it might be well to intensify the drive against the simpler problems of infes-

tation, impetigo, and scabies. Teachers remarked on several occasions that after the long summer holiday infestation was always a big trouble owing to the lack of supervision during this period. If there is any truth in this statement the same difficulties will arise again, particularly in areas where the children have not yet returned to school.—I am, etc.,

Colchester, March 26. F. PYGOTT.

## Occupations for A.R.P. Workers

SIR,—Professor Major Greenwood's article in your issue of March 16 (p. 448) raises a point of importance to all A.R.P. authorities. Now that the workers in the first-aid posts are trained according to the prescribed schedule it is necessary to take steps to prevent the risk of staleness among the staff. The provision of constant occupation is the most certain prophylaxis against boredom, but to be lastingly effective the work provided must be interesting and, if possible, constructive in character. At the present time, when voluntary assistance is an important factor in the A.R.P. forces, it seems desirable to pool our ideas in the hope of mutual benefit, and the various ways in which Dr. James Fenton, medical officer of health for Kensington, has attempted to solve this problem should be of general interest.

In the first place, efforts are made to arrange the post-certificate work directly connected with the first-aid training of the personnel in ways calculated to stimulate the interest of the staff. The routine medical and nursing lectures and combined exercises are now, as Professor Greenwood remarks, losing their novelty, but it is possible to obtain outside lecturers to give fresh views on the old topics. The hospitals have been extremely kind in opening their wards to the A.R.P. volunteers, who can thus obtain valuable experience and also an interesting insight into the nature of a nurse's training. A popular innovation in this borough has been the introduction of competitions between the different first-aid posts for a challenge cup. The rehearsals which preceded the final tests were effective in arousing a keen desire among the personnel to perfect their knowledge of the details of first-aid and anti-gas treatment.

The second way in which occupation has been found for the A.R.P. staff during this period of absence of air raids is that mentioned by Professor Greenwood—that is, to arouse their interest in general public health work. This subject holds enormous possibilities of interest for the staff and can be expanded in many directions. In Kensington infant welfare centres are held at two of the first-aid posts, and the first-aid personnel assist the borough council's doctors and health visitors at the sessions. At the other posts a rota of volunteers attend the nearest welfare centres to help with the mothers and babies. Recently the routine bathing of school children has been instituted in the gas-cleansing stations attached to the first-aid posts; the volunteers assist the school nurses with this work, which seems likely to serve a useful purpose. Lectures on maternity and child welfare and on general public health subjects are given in the first-aid posts by doctors, nurses, and sanitary inspectors and are proving extremely successful. From the lecturer's point of view the interest of putting technical subjects into non-technical language is a real one: there seems hardly a subject one cannot "get across" to a lay audience and gain new insight into it oneself in the process.

The third class of occupation consists in the performance of work to assist the ancillary services of the Forces, such as the formation of depots for knitting at the first-aid posts or using the latter as depots for the repair of protective clothing or of respirators.

Lastly, one can provide subjects of general interest in lectures or classes, and there is also the question of recreation. In the first group members of the post may be able to supply outside lecturers from among their acquaintances to speak on special subjects, or it may be possible to get groups to study a foreign language. In games the team spirit and the competitive spirit are to be encouraged, as they tend to keep the volunteers attached to their centre and interested in their companions. Games such as table tennis are useful in this connexion. Music and drama present valuable potentialities, and the Kensington posts have instituted a regular series of concerts varying from the severely classical to the music-hall variety. These concerts, as well as giving pleasure to the audiences, are a source of interest to the performers on the occasions when these are provided by the post. Dances are always a popular item, and their success is probably greater if they are kept for special occasions and not allowed to become a routine.—I am, etc.,

Kensington, W.8, March 21. VIOLET RUSSELL.

## Anaphylaxis after Injection of Tetanus Toxoid

SIR,—With regard to the papers on this subject by Air Vice-Marshal H. E. Whittingham and Drs. H. J. Parish and C. L. Oakley (*Journal*, February 24, pp. 292 and 294) and the correspondence referring to these (March 2, p. 368; March 16, p. 463), I would like to draw attention to the fact that Witte peptone contains a component common with the human group antigen A. It is possible that this constituent may be responsible for the phenomena described. Ottensooser (*Klin. Wschr.*, 1932, **11**, 1716) has already called attention to the possibility that reactions may be caused in group O or B persons following the injection of preparations containing A substances. It appears, however, that he was unable to detect distinct differences by the use of peptone or other substances in skin tests on individuals belonging to different blood groups. It is possible that a suitable reactivity may be produced on occasion by repeated injections under certain circumstances. Such an assumption may suggest the advisability of paying attention to the blood group to which the persons with allergic reactions belong. Anti-A antibodies would originate especially in individuals belonging to the groups O and B. I wish to emphasize that this is only a theoretical suggestion and need not necessarily be the explanation.—I am, etc.,

School of Pathology, Trinity College, Dublin, March 22. H. SACHS.

## Dental Anaesthesia in Children

SIR,—Most anaesthetists will agree with Dr. Harold Sington's statement (*Journal*, March 23, p. 503) that "there are many amazing assertions in the article by Dr. Jane O. French and Messrs. M. Linton Hooker, R. Branscombe Vause, and A. L. Robinson on dental anaesthesia in children in the *Journal* of March 16 (p. 432) which call for criticism." He has rightly pointed out that the technique used for the administration of ethyl chloride could be improved upon, and I would venture to suggest that the administration of vinyl ether has similarly not been mastered. The administration of an anaesthetic to children for dental extractions requires a close study of the respiratory signs of anaesthesia, for no other signs can be relied upon, whatever the agent employed.

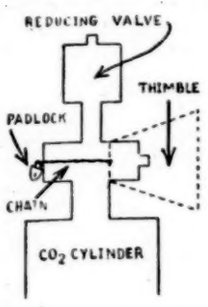
I have administered vinyl ether on more than 2,000 occasions for dental extractions in children: never has more than one ampoule of 3 c.cm. been used; struggling is no more frequent than when ethyl chloride is employed on an open mask, and definitely less than when it is used in an inhaler. The available working time for the extractor is seldom less than fifty seconds, and can be made to last as long as seventy to ninety seconds. This depends upon the depth to which the child is taken before the inhaler is removed. Anaesthesia can, however, be prolonged for several minutes by changing the face-piece after induction for a special nose-piece (*Postgrad. med. J.*, 1939, **15**, 160, p. 58) and then reapplying the inhaler to the nose. The smell of vinyl ether can readily be masked by applying a few drops of oil of lavender to the face-piece before use.

At the postgraduate anaesthetic courses which are held at the Eastman Dental Clinic, 90 per cent. of the members of which are dental surgeons, it is always said at the end of the course that the most useful thing that has been taught is the administration of vinyl ether, and it is the encouragement given by my dental colleagues that has made me enthusiastic in my praise of this new anaesthetic agent.—I am, etc.,

London, W.2, March 21. VICTOR GOLDMAN.

## "Safety First" for Anaesthetists

SIR,—Anaesthetic accidents must happen occasionally. Coroners' inquests are unpleasant advertisements for the people concerned. The general public are alarmed by the sensational reports in the lay press. We anaesthetists well realize that no rules will prevent such disasters, but I think that if we can show that all possible precautions have been taken and that rules for the guidance of young house officers and junior anaesthetists are displayed in the anaesthetic room, then at least there is proof that we have tried to combat carelessness. Carbon dioxide has been proved of late to be required only occasionally. Indeed, some people consider it both unnecessary and dangerous. In this connexion we have designed a lock to prevent accidental use of $CO_2$ on any anaesthetic machine. I enclose a copy of the rules to which I have referred and a rough sketch of the $CO_2$ cylinder key lock.




*Rules for Anaesthetists*

While it is desirable that gas bottles, etc., be replaced by a theatre steward, it should be definitely understood that all responsibility rests with the anaesthetist and no one else.

The apparatus should be well blown through with gas and oxygen before use, and tested by the anaesthetist to make certain that no chloroform or ether is being inadvertently admitted.

All chloroform and ether must be poured away at the end of an operating session.

No chloroform bottle should be allowed on the anaesthetic table. When chloroform is required it should be obtained from a locked cupboard and replaced in that cupboard immediately after use.

It is suggested that the use of chloroform be excluded so far as possible.

The valve on the $CO_2$ cylinder should be kept locked, the key to be at hand on the anaesthetic table. It need only be unlocked in an emergency and promptly locked again.

*$CO_2$ Cylinder Key Lock*

This lock is made rather like a pyramidal thimble which fits over the pin which normally takes the key. A chain around the neck of the cylinder secures this in position, and the chain is further secured by a padlock.—I am, etc.,

Reading, March 21. H. PARRY-PRICE.

## Herniotomy in Old Age

SIR,—In deference to the wishes of Messrs. J. A. Ross and A. Fraser I was one of several correspondents who had sent you for publication reports of cases of herniotomy in the aged. A report by one correspondent of a case of strangulated hernia in an old man which required a major surgical procedure reminded me of a somewhat similar case which came under my care some time ago. The case is interesting from the point of view of the appropriate anaesthetic in such a case.

A woman over 70 years old was sent to me by Dr. O'Reilly of Kilcock, Co. Kildare. There was a history of a strangulated right inguinal hernia of two days' duration. The patient had been vomiting intermittently for forty-eight hours. She looked toxic, and, on the whole, appeared to be an extremely bad operative risk. Under spinal anaesthesia (stovaine) the hernia was exposed. When the sac of the hernia was opened blood and foul-smelling fluid escaped. The sac contained a loop of small intestine which was gangrenous. The gangrenous mass was resected and an end-to-end anastomosis rapidly effected. The patient had a rather stormy convalescence, but under appropriate post-operative treatment eventually recovered.

Provided a strangulated hernia in an old person is of recent origin, I believe that local anaesthesia is admirable. Should, however, the surgeon suspect from the history of the case that the loop of bowel may be gangrenous or of doubtful viability, then spinal anaesthetic, in my opinion, is the anaesthetic of choice. I hasten to add that the case was seen by Dr. O'Reilly only an hour before her admission to hospital.—I am, etc.,

Kildare, March 11. D. J. CANNON, M.D., B.Ch., M.A.O.

## Rheumatism and Climate

SIR,—Dr. C. M. Heanley in the *Journal* of December 30, 1939 (p. 1302), states that rheumatic fever with carditis does not occur in South China, although the predisposing causes (mentioned in Sir Leonard Hill's article "Rheumatism and Climate," *Journal*, August 5, 1939, p. 276)—namely, dirty, ill-ventilated houses, density of population, and bad diet—are present in superlative degree. At Tan Tock Seng Hospital, Singapore, in 1938 rheumatic carditis accounted for thirteen out of a total of 793 necropsies, or 1.6 per cent. (figures obtained from the pathological department, King Edward VII College of Medicine). The patients in these cases were Chinese from Fukien, Kwangtung, and Kwangsi provinces of South China. They all gave a history of previous rheumatic infection in China.

Sir Leonard Hill wrote that rheumatic fever is reported to be unknown in hot tropical regions where there is no seasonal change of climate—for example, Perak, Singapore, etc. He is entirely wrong. In Singapore rheumatic fever is not a rare disease, and many cases are recorded in which the heart shows clinical evidence of rheumatic carditis, which is confirmed at post-mortem examination. It may be interesting to know that rheumatic carditis is also prevalent in Ceylon, as Dr. F. B. Fernando, writing in the *Quarterly Journal of Medicine*, July, 1939, states that the incidence of rheumatic carditis was 1.4 per cent. of the total admissions and 21.5 per cent. of the cardiovascular admissions into the General Hospital, Ceylon, for the period July, 1934, to November, 1937.

This clinic is particularly interested in the variations of disease as it occurs in different races, depending upon diets, customs, and climate, and it is erroneous remarks such as these, which one so frequently sees in the medical press based upon no known facts, that hamper any real attempts to study the ecology of disease.—I am, etc.,

Medical Clinic, Tang Tock Seng Hospital, Singapore, March 15. A. V. PESTANA.

## Prehistoric Trephining

SIR,—Your annotation in the *Journal* of March 23 (p. 492) on prehistoric trephining is of very considerable interest. I think I might add to that interest by a brief mention of a prehistoric trephined skull discovered at Ovingdean, near Brighton.

On January 12, 1935, a fisherman was trawling off Ovingdean and found in his net a curious-looking piece of bone, with two holes in it. He took it to Mr. H. D. Roberts, the curator of the Brighton Museum, who asked me to look at it. I recognized it as an example of prehistoric trephination, but knowing how extremely rare the condition was in England (there are only two examples known previous to this) I hardly dared believe I was right. We had the skull examined by Dr. J. Beattie of the Royal College of Surgeons, and Sir Arthur Keith, the eminent palaeontologist, and Dr. T. Wilson Parry, who all agreed my opinion was correct. There were two trephine holes, the first instance of double trephination to be discovered in England. The operation was successful, for the bone had begun to heal.

It is not certain how far out at sea the trawler had picked up the skull. He worked from the shore outwards to a distance of about three-quarters of a mile. There had recently been a heavy landslide off the cliff at Ovingdean, and it is probable that the skull had been buried some 4,000 years ago and was carried by the landslide into the sea. It had evidently not been long in the water.—I am, etc.,

Hove, Sussex, March 25. L. A. PARRY, F.R.C.S.

## Infant's Gas Mask as Oxygen Tent

SIR,—An infant aged 4 months, living in a council house, came under my care on February 29 suffering from a cold. On March 4 she developed bronchopneumonia with a temperature of 105° F., pulse 180, and respirations 60. She was flushed, dyspnoeic, choking with phlegm, and looking ill. I put her on sulphapyridine, grains 12 in the first twenty-four hours, and subsequently grains 9 each day for three days. She was placed in her gas mask, used as an oxygen tent, and oxygen and carbon dioxide were administered through a Woulfe's bottle, rubber tube, and cannula inserted through the mica. It was found that when the mask was used complete with the normal strapping round the waist and the bellows in use (in addition to the stream of oxygen and carbon dioxide) the window became fogged and the baby bathed in perspiration. The simpler method of having the apron unfastened was adopted with success; moreover, it made pumping unnecessary, and the patient could be safely left to its parents' care at night. The temperature, pulse, and respirations fell steadily. The temperature was normal on the third day, but rose again on the fifth day to 101° F., and sulphapyridine was repeated; it has been normal since the seventh day.

When the infant was removed from the tent to be fed or changed she at first became very dyspnoeic, but by the fourth day she could be out of it for a period of an hour; on the sixth day she was removed from the tent altogether, and has continued to make a good recovery.—I am, etc.,

Findon, Sussex, March 23. DAPHNE V. VEALE, M.B., Ch.B.

## Epanutin for Epilepsy

SIR,—From the recent articles in your *Journal* there is obviously a growing interest in the use of this drug, but chiefly in the case of adolescents and adults. It would be interesting to have some reports on the cases of younger children who have been treated with this drug, for the epileptic child is a pathetic creature, and any alleviation one can give to the symptoms of such would be welcomed.

Six months ago I took over the treatment of a baby girl aged 13 months. This child was the result of an easy delivery, but there was a history of epilepsy on the father's side. She began to have the fits at 3 months old. Her fits were almost daily and usually of great frequency, as many as six in a day at times. The child's expression was a normal one, but there was no response to anything, no co-ordination of movement, no attempt to take hold of anything, no attempt to sit up and smile, so that one thought possibly the child was blind. Her parents, in fact, said truly that "she lived in a world of her own." The child was having frequent doses of luminal and bromide, and after my first attendance was put on one half-capsule dose of epanutin mixed with her food, and three doses of the luminal and bromide mixture. This was gradually changed until at the end of a month she was having four half-capsules of epanutin only and no luminal at all. About this time we found for some reason or other the child was vomiting a lot, so we decided to give her two half-capsule doses of epanutin and two doses of the luminal and bromide mixture. This has suited her well, and the improvement since this decision was made has been very marked indeed. At the present time the child has been almost free from fits, except for one or two very minor ones, for nearly three months. Her mental condition has improved remarkably. She is now seriously attempting to sit up. The vision is distinctly present, and her eyes follow a movement of oneself or an article, and she makes attempts to reach them. She smiles intelligently and now has an apparent appreciation of different persons and things. There have been no toxic symptoms, except possibly the sickness.

It is of course impossible to contemplate what the ultimate prognosis is going to be in this case, but the result of six months' treatment with this new drug is very gratifying.—I am, etc.,

HAROLD D. PICKLES, *M.C.*, M.R.C.S., L.R.C.P.

Woodchurch, Kent, March 28.

## Nasal Sinusitis in Children

SIR,—After working for some years at the Children's Hospital (1893) I was concerned at the many failures after removal of tonsils and adenoids. In 1902 I suggested that more attention should be paid to the antrum. Later I began opening it in cases which failed to improve after tonsillectomy, and was astonished to find that it was often filled with polypi. After the war I began to use diathermy to improve the rest of the nasal mucosa. In 1920 I started the treatment of nasal sinusitis with diathermy before operating, and I found in about 75 per cent. of children that all operations could be avoided. For the last twenty years I have only operated once on a child's antrum. The results in adults naturally are not so dramatic but still gratifying.

My routine is as follows: (1) A course of nasal hygiene—blowing one nostril at a time, frequently and forcibly—general hygiene, including food. (2) A course of diathermy: low voltage, 250 to 500 mA, frequency 1,500,000, half an hour every day for two weeks, three times a week for two weeks, twice a week for two weeks. (3) If improvement be not satisfactory remove adenoids and electrocoagulate the inner wall of the antrum; even in children this opening is generally permanent.

Cantor investigated a series of cases of nasal sinusitis in children, and stated that many of them had no enlargement of tonsils and adenoids. It would have been more to the point if he had found absence of sinusitis in cases of hypertrophy. I maintain that sinusitis is the chief cause of hypertrophy. Washouts are useless for cure and generally unnecessary for diagnosis. Much inspiration has been gained from the efforts of Layton and Kayser to diminish the indiscriminate slaughter of tonsils. Allergic cases do not respond so well to the above treatment.

During the past six years while examining young recruits for the Tramways Board I have seen hundreds of cases of severe sinusitis in which tonsils have been removed in childhood.—I am, etc.,

Melbourne, March 6. W. KENT HUGHES.

## Universal Thomas Splint

SIR,—The Thomas bed knee splint with fixed extension is an admirable method of treating fractures of the femoral shaft, and in the present emergency it would appear to be the method of choice. Once the splint is applied and the fracture reduced, patient and splint become one rigid unit, and the removal of a patient from an emergency to a base hospital can be accomplished without disturbing the fracture.

To use this method effectively the splint must fit the patient. Unfortunately, in recent months it has been increasingly difficult to obtain new splints to supplement and replace stock. One is therefore sometimes faced with the problem

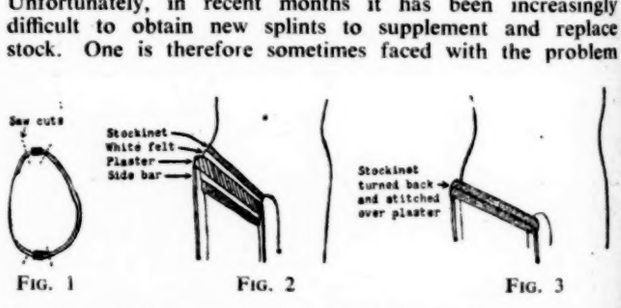



FIG. 1 FIG. 2 FIG. 3

of attempting to use a splint which does not fit, or using another method of extension. This difficulty would be accentuated if the numbers of fractures increased suddenly, as might be expected in air raids. Faced with this problem some time ago, I decided to make a splint which fitted the patient, using plaster-of-Paris for the ring. A Thomas bed knee splint of suitable leg length was taken, the padding removed, and the anterior and posterior halves of the ring sawn off, leaving one inch attached to each side bar (Fig. 1). The effect was to produce something like a long walking iron. A piece of stockinet, four inches wide and of suitable length, was placed round the patient's groin, fitting well over the ischio-pubic ramus and the

ischial tuberosity. This was stitched neatly over the anterior aspect of the limb. Over this was placed a piece of white felt, three inches wide, secured in a similar manner. A two-inch plaster-of-Paris bandage was passed round and round the felt until a layer of about a quarter of an inch was obtained. This was moulded well to fit the contour of the groin. As the plaster set the edges of the stockinet were pulled upon in order to flare the plaster and prevent sharp edges. The side bars were secured to the ring with further turns of a two-inch plaster bandage (Fig. 2). The leg was then put up, with strapping extension, in the usual manner. The ring was finished off by turning back the stockinet over the plaster, trimming away excess, and stitching the stockinet over the outer aspect of the plaster (Fig. 3). The splint was secured to the raised lower end of the bed, the groin being treated with powder four-hourly.

I first used this method in 1938, and have used it on several occasions since as the need arose. I have found it satisfactory. A further improvement may be made by preparing sets of side bars with the upper projecting ends flattened. By this means the joint between ring and side bars is rendered less bulky.—I am, etc.,

GILBERT PARKER, F.R.C.S.Ed.,
Honorary Assistant Surgeon and Surgeon to the Fracture Unit.
North Riding Infirmary, Middlesbrough,
March 17.

## War and the Medical Services

SIR,—I, too, am an old man, like my friend Dr. Alfred Cox, but I am much interested in his letter in the *Journal* of March 23 (p. 507) on "Free Choice of Doctor" and those of Dr. D. Stark Murray, Dr. Willoughby Clark, and Dr. E. U. MacWilliam in the *Journals* of March 9 (p. 416), 16 (p. 463), and 30 (p. 548) respectively on "War and the Medical Services." I think Dr. Murray's letter gives a rational explanation of the views of many on "free choice of doctor," and Dr. MacWilliam visualized a reorganization of the medical services as giving "security of livelihood" and "many other attractive features," but as involving a surrender of "individual liberty" and a "general centralization of control by an omnipotent bureaucracy."

May I ask the following questions of your readers?

(*a*) How far does "individual liberty" extend beyond liberty in the doctor's technical sphere, in which domain he undoubtedly must remain the trusted leader, adviser, and friend?

(*b*) Was it and is it really necessary, ethical, and scientific to give up our "individual liberty" in the E.M. Service in *wartime* in order to conquer Hitlerism and disease?

(*c*) Is it really necessary, ethical, and scientific to give up our "individual liberty" in *peacetime* to win the war against disease?

(*d*) Is (*c*) as much in the public interests as (*b*)?

(*e*) Should of need a bureaucracy be allowed to be "omnipotent," and cannot these public servants be controlled by a democratic people? If not, why not?

I think that I can leave the answers and their reasons to the medical logicians of a younger generation than mine.—I am, etc.,

Woking, March 30. F. G. BUSHNELL.

## Free Choice of Doctor

SIR,—The pleasure of having my knuckles rapped by the honourable pen of Dr. Alfred Cox (*Journal*, March 23, p. 507) is increased by the encouragement given me by his questions to expect more from him.

He is so suspicious of my application of the word "psychopathic" to those who demand a particular doctor to trust that he invites me to consider that word in conjunction with myself. But surely it is obvious that patients who insist on putting faith in a particular doctor are suspiciously eager candidates for treatment by suggestion. He believes that there is a conflict between my practice and my theory which my experiences as a doctor and as a patient should correct. But I have performed the experiment he proposes for me. Last autumn I retired to an isolation hospital and became the patient of a council-provided physician and progressed well, although I would not have chosen him if I had been free to choose my doctor then. And my knowledge of human nature, such as it is, leads me to discourage excessive faith in patients lest excessive demands and eventual distrust should follow.

Dr. Cox's desire for himself, and consequently for others, for known and trusted doctors to inspire the most satisfactory response to treatment prompts him to describe my argument against the overriding desirability of free choice of doctors as ingenious and purely academic. But this belittling of my sincerity does not relieve my suspicion that in our anxiety to give patients the doctors they want we fail to give them what they need. I am aware of the possible beneficial effects of faith. But I wonder whether a doctor's conviction that patients should have the doctors they want is not unduly fortified by that doctor's desire to have the patients he wants.

I fear that what we gain on the swings of suggestion we lose on the roundabouts of undue suggestibility: the patients that trust us so eagerly will also willingly trust others less trustworthy. So I am sorry that insistence on the need for free choice of doctors—founded, as I believe, on the desires to bewitch and be bewitched—should be an effective obstacle in the way of the establishment of a trustworthy national medical service. I am looking forward to doing my share in establishing reasonable confidence in a national medical service that will banish quack medicines and quack medicine, purposefully restricting the dangerous practice of treatment by suggestion. So I hope that it will soon be recognized that the average patient can advantageously trust the average doctor, although the choosing of a doctor for his work may be done only by those entitled by their knowledge of the man and his work to make that choice.

In conclusion, Sir—and in reply to Dr. E. U. MacWilliam (*Journal*, March 30, p. 548)—I submit that doctors and patients would save much trouble if they welcomed rather than resented being urged to make the inevitable surrender of their primitive liberty to be capricious, with the associated liability to become enslaved by enchantments. They cannot successfully defy this recurrent demand of developing civilization. They could so much more advantageously strive to leave as little as possible to blind chance in the evolution of a progressive medical service.—I am, etc.,

Llanbradach, March 30. WILLOUGHBY CLARK.

## Some Thoughts on Medical Recruitment

SIR,—Some experience of the last war, several years in "Pensions," a lifelong and familial interest in the Service man, and recent experience as emergency officer of a B.M.A. Division, have combined to shape my thoughts in a way that may be worth recording at the present time. The profession's own representatives have recommended that its protection should be withdrawn because, it is rumoured, the younger men are reluctant to join up properly without the pressure of compulsion. The newly qualified, or some of them, are worrying about their careers and their further education. They were not like this in 1914. In my own hospital every fit houseman was in uniform by the Wednesday evening and was gone next day, leaving the two crocks and others to carry on the service of the hospital until adjustments could be made. Their careers did not suffer. For two the career was France, the M.C., and an honourable death. The others all came back to the hospital in 1919, relearned their medicine and made good; one has reached senior rank on the staff and much renown.

I think all hospitals could tell the same tale, and I cannot recall any young doctor among my friends of those days who, having reasonable health, did not join up very soon. I remember one who, in August, said he wouldn't, but he had done it by December! And I remember a very quiet fellow of gentle nature who managed to get accepted and to give a few months' service over-seas. He wanted to do his bit before his phthisis finished him! I don't think the present "under 30's" are afraid of death. Let them not be over-anxious and afraid of life, and let them not be selfish. We have a

bigger job to do than we had in 1914, and if it is not done properly there will be no careers for anyone.

If my own Division is an average one there is no criticism of the 30 to 50 age group. Some have gone already, and of the remainder almost every man is available for any service required of him, subject to release by the Local Emergency Committee. As one, who is married and in single-handed practice, said to me: "It is very difficult to decide for oneself. Tell me when I am due to go and I'll go. I'm ready."

But there is a doubt in the minds of some who have joined and of some who are waiting their turn because there are long periods with little to do, and there is so much work in the practice at home. Are they wasting their time? The answer is found in the words of the London *Gazette* in announcing the award of the D.S.C. to the medical officer of the *Achilles*: "He had gained the confidence of the ship's company and won their esteem and affection, and so contributed much to the contentment of the lower deck." This theme runs through many of the citations for the Battle of the River Plate: "He had so well prepared."

The battalion M.O., and his equivalent in the other Services, is not there just to deal with casualties, inspections, and the sick parade To him, by his profession and training, as to the padre by his cloth, is given a peculiar opportunity to become the soldier's friend and counsellor, to keep him not only fit but happy and confident. The battery commander of 1914–18 was right in teaching that each junior officer was to blame for "crime" among his men. The M.O. also can prevent unnecessary crime; he can prevent the unnecessary breakdown into "shell shock"; and he can so help his men that they go home after the war steady, contented, with no complaint, resentment, or sense of hardship. For the future resettlement of the country this is important. To achieve these aims the M.O. must be a good doctor, but he must also be a wise man and a good soldier. A few months is not long to spend in learning how to do these things.—I am, etc.,

March 18. "EMERGENCY OFFICER."

## Eclipsed Consultants

SIR,—At the outbreak of war many of the consultants of London abandoned their practices to serve with the E.M.S. for a period, as they then understood, of one year. Some of them forthwith made arrangements to give up their professional telephones; others found that their telephone had given them up, that their landlord had been obliged to close the house in which they had had their consulting room.

In December these consultants were invited by the Ministry of Health to return to part-time practice, and many of them did so. But when those whose names should appear in the A–K volume of the telephone directory sought to have their names entered therein they found that the latest date for submitting their entry was November 21.

The present position is that those consultants who gave up their professional addresses at the outbreak of war cannot now be traced by their professional brethren who seek them in the A–K telephone book published in February. This disadvantage will be rendered more serious if there is to be no half-yearly reissue during the war.—I am, etc.,

London, W.1, April 2. A. DOYNE BELL.

*** We know that a number of consultants have already notified their colleagues by card that they have resumed practice, either at their former address or at a new address with a new telephone number. Such notification would do something towards remedying the hardship to which Dr. Doyne Bell draws attention.—ED., *B.M.J.*

The Ross Institute of Tropical Hygiene has issued a booklet entitled *Conservancy for Tea Estate Labourers in India*, which is a discussion on methods of meeting some of the difficulties encountered in introducing the bored-hole type of latrine, the writers being Drs. B. A. Lamprell and G. C. Ramsay. This booklet can be obtained free on application to the Organizing Secretary, Ross Institute of Tropical Hygiene, Keppel Street, London, W.C.1.

# Obituary

## C. M. FEGEN, M.R.C.S.

Formerly Chairman of Council, London and Counties Medical Protection Society

Dr. Fegen, well known to large numbers of the medical profession owing to his long association in executive positions with the London and Counties Medical Protection Society, died on March 25 at the age of 78.

Charles Milton Fegen was born at Harwich and educated at Bedford Grammar School. He qualified M.R.C.S.Eng. in 1885, and L.R.C.P.Ed. and L.M. in 1887. He devoted his attention to public health, taking the Conjoint D.P.H. of the Royal Colleges of Physicians and Surgeons in Ireland. He was formerly medical officer of health for the Ampthill rural district in Bedfordshire and the Coulsdon and Purley urban districts in Surrey, and he was also medical superintendent of the isolation hospital, Mitcham. Although in his mid-fifties he volunteered for active service in the last war, and served in Salonika as major R.A.M.C.T., where he was mentioned in dispatches.

His association with the London and Counties Medical Protection Society dated back for nearly fifty years. He was the sole surviving member of the original council of that body from the time of its registration in 1892. He was vice-president from 1911 until his death, and chairman of council from 1913 to 1931. In that position he showed great abilities, and his grasp of detail in the complicated business which continually came before such a body was of the very greatest service. On the resignation of Dr. Hugh Woods, who was, like himself, a founder-member, Dr. Fegen was appointed to the secretaryship, and in that capacity also he laid the society under a great debt. He served as secretary from 1932 until 1938, when Dr. R. W. Durand, the present secretary, was appointed. Another of Dr. Fegen's great interests was the National Society for the Prevention of Cruelty to Children, of whose council he was a member, and it was a great pleasure to him to be able to bring the offices of the "London and Counties" into the building of the National Society in Leicester Square. For some time past Dr. Fegen had been living in retirement at Dunsfold in Surrey. By his old colleagues in the society whose fortunes he directed for so many years and by many others in the profession and beyond it he will be remembered for a kindly personality as well as for considerable executive gifts.

A correspondent writes: After retiring from his public health work Fegen had more leisure to devote to the Council of the London and Counties Medical Protection Society, of which he had been for many years a most energetic member. At an age when most men, especially those who have retired on a pension after a long professional career, think more of cutting down their activities than of increasing them, Fegen took over the paid secretaryship of the L.C.M.P.S. when the failing health of Dr. Hugh Woods, who had been secretary ever since its foundation in 1891, compelled his resignation. He filled the gap with his usual energy and with marked distinction for a few years, and only gave up two or three years ago, when he was succeeded by Dr. Durand.

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The death of CHARLES BUTCHART GERRARD at Oldham at the comparatively early age of 55 removes from the profession a man of outstanding personality. Of old Aberdeenshire yeoman stock, he was educated at Huntly Gordon Schools and Gordon's College, Aberdeen. He qualified at Aberdeen University before he was 20 and took the D.P.H. in 1906. A house-surgeonship in Leamington preceded assistantships in Northumberland and Bootle until 1911, when he settled in Oldham in partnership with the late Dr. Martland. In the following year he was appointed pathologist to Oldham Royal

Infirmary, and later assistant surgeon, and after the last war full surgeon. During that war he was surgical specialist at the Deccan Hospital, Poona. The confidence that his medical colleagues had in him is reflected in his membership and chairmanship of many committees and societies: secretary of the Oldham Division of the British Medical Association for thirteen years; Representative in the Representative Body of the Association in 1921; member of Oldham Vigilance Committee; president of Oldham Medical Society; secretary of the Panel Committee; member of Oldham Insurance Committee; representative to the Panel Conference; member of the Local Emergency Committee; and, lately, chairman of the Oldham area medical board. During the whole of his professional life he took an absorbing interest in hospital administration, and was a doughty opponent of lay efforts to obtain dominance in that direction at the expense of the dignity of the profession. For many years he was a governor of Oldham Royal Infirmary, as well as chairman of its House Committee. He was an ideal chairman—impartial, far-sighted, infinitely patient, tactfully tolerant of minor irrelevancies, and his temper never became ruffled. Charles Gerrard was an all-round man, *totus, teres atque rotundus*. Active in sport in his early days, he remained keenly interested in several aspects of it to the last. He was a scratch golfer, and during his university career won the Rosebery Cup open to all golf clubs in the city of Aberdeen. He won the Oldham Medical Society Golf Cup on several occasions. He represented his alma mater at Association football as well as at golf, and he was an enthusiastic supporter of local Rugby football and of Lancashire Cricket Club.

Those of us who have worked with him mourn the loss of one whom we recall with pride for his unswerving staunchness, integrity, and loyalty. The large attendance at his memorial service of colleagues and patients, especially his poorer patients, was proof of the high esteem in which he was held by all who knew him.

By the death in his fifty-third year on February 14 while on active service in France of Colonel ALEXANDER ERSKINE DRYNAN, R.A.M.C., the medical profession of Sussex has lost one of its most distinguished and popular members. Born in 1886, he graduated at Edinburgh, 1907, and after holding hospital appointments at Morningside Asylum, Edinburgh, Birmingham General Hospital, and York County Hospital he immediately joined up at the outbreak of the last war. He served in France with the R.A.M.C. from 1914 to 1918 with great distinction, and was awarded the Military Cross, afterwards serving in Palestine, Egypt, and Constantinople. "J. H. T. D." writes: In 1928 he settled in Brighton and soon acquired an extensive practice and a large circle of friends. In 1930 began an association with the dermatological department at the Royal Sussex County Hospital which continued uninterruptedly until the war, at the outbreak of which he was immediately mobilized. Two and a half years before the war he had joined the Territorials and had formed two R.A.M.C. units which he commanded as colonel. His activities, which were many and varied, included the reorganization of the Sussex branch of the St. John Ambulance Association, which, mainly through his untiring efforts, acquired and manned an up-to-date ambulance. For many years he was a member of the B.M.A. He was a moving spirit in the formation of the Sussex Medical and Dental Golfing Society, won several of the trophies from a short handicap, and was elected captain. He was also an accomplished musician. He married in 1931 and is survived by his widow.

The death of JAMES MACLACHLAN, M.B.E., M.B., C.M., took place at Shrewsbury on March 2 from an attack of coronary thrombosis in his seventy-seventh year. In early life Dr. Maclachlan practised his profession in Bonhill and Vale of Leven district of Dumbartonshire, where he soon took an active part in the life of the district, becoming a county councillor, president of the local Liberal Association, and member of the Board of Education. All his life he took a very active part in ambulance work. In 1894 he succeeded his brother in Dornoch as medical officer, where he laboured with marked success for forty-two years. In Dornoch he threw himself with great vigour into all the public bodies and movements for the welfare of the people, and was provost of the burgh for nine years; in addition to being a J.P. he became an honorary Sheriff Substitute for the county, and president of the local pipe band and numerous other bodies. He retired from practice in 1936, and received a public presentation, having then completed fifty years of medical work. As a doctor he made his name as a very successful accoucheur, one woman travelling all the way from America to be under his care. His funeral in Dornoch was a public one, some thirty wreaths testifying to the love and affection he inspired in his patients and friends. Although sparely built, he was very active to the end of his career, having charge of the Red Cross work for the east coast of Sutherland.

Dr. ARNOLD GILRAY, medical superintendent of the Mayday Hospital, Croydon, died on March 2. Dr. Gilray was a New Zealander, the son of the late Professor T. Gilray, LL.D., of Dunedin, and was educated at Dunedin High School and Otago University (Dunedin Medical School). He qualified M.B., Ch.B. of the University of New Zealand in 1919, and until 1921 was house-surgeon at the Napier Hospital, Hawke Bay, on the North Island. He then came to London, and for a year was house-surgeon and casualty officer at the Miller General Hospital. Later he was appointed medical superintendent of the Mayday Hospital, which is administered by the Croydon County Borough Council. This was the hospital in which the greater number of cases in the recent typhoid epidemic in Croydon were accommodated. Dr. Gilray joined the British Medical Association immediately on his qualification in New Zealand and remained a member throughout his career. His death at the early age of 47 is much regretted in Croydon and district.

The death took place suddenly on March 4 at his home at Bexhill of Dr. JOHN HERBERT KEPPEL-COMPTON, who had practised for many years in the south of England and was formerly public vaccinator for Southampton No. 2 district. Dr. Keppel-Compton was born just over seventy years ago at Hereford, and was educated at Weymouth College and Norwich Grammar School. He qualified M.R.C.S.Eng., L.R.C.P.Lond. in 1893. In his student days he was an athlete, and represented his medical school—Guy's—in 1889 in the half-mile amateur athletic event. Fifteen years ago he contributed to this *Journal* a paper on heart strain in youths caused by riding of trade cycles with heavy carriers. He was a member of the British Medical Association for forty-four years.

A wide circle of friends and former colleagues will mourn the passing of Dr. G. W. A. LYNCH, who died after an operation on March 22 at the age of 78. George William Augustus Lynch was a son of the late W. N. Lynch, barrister of Georgetown, British Guiana. He was educated at Westminster School, Caius College, Cambridge, and St. Thomas's Hospital, and graduated B.A., M.B., B.Ch.Cantab., taking also the M.R.C.S., L.R.C.P. diplomas. He was appointed a medical officer in Fiji in 1890, and served in that colony with great ability and distinction for thirty years. He was appointed chief medical officer in 1908, and was elected a member of both the Executive and Legislative Councils of the colony. He retired at the end of the last war, and thereafter practised very successfully for several years at Aldeburgh, Suffolk. Dr. Lynch was a most able and popular doctor and a very capable administrator. He did fine work in the medical service of Fiji, and was one of the most prominent and respected citizens of the colony. In 1907 he married Miss Katharine S. F. Crosby, who, with one daughter, survives him.

On March 25 the death occurred at Eastbourne of Lieut.-Colonel H. J. HARGRAVE, aged 77, a retired member of the R.A.M.C., who had many friends both in London and the provinces. He graduated M.B., C.M. at Aberdeen in 1885. In recent years (writes a correspondent) his interest in psychiatry was evinced by his frequent habit of taking holiday locumtenencies in various mental hospitals. He was a valued

member of a well-known London club, where his commanding figure and deeply lined face below its plentiful covering of white hair were both familiar and welcome to his many friends. He was an ardent bridge player, whose somewhat original and unorthodox methods sometimes upset the calculations of his partners as well as of his opponents. For the last twelve months or more his fellow members had noted with deep concern the obvious symptoms of failing health, the significance of which was equally manifest to Hargrave himself, for he often alluded to the subject. To his widow the respectful sympathy of his many professional friends will be widely offered.

We regret to announce the death of ARTHUR CORRIE KEEP, consulting surgeon to the Samaritan Hospital, London, on March 26 at the mature age of 79. He had a distinguished career at Edinburgh as a student, and took his M.B. and C.M. in 1885. After leaving Edinburgh he became house-surgeon to the Guest Hospital, Dudley, and then spent some time in the anatomy department of the Middlesex Hospital. When he was elected to the staff of the Samaritan Hospital he was junior to W. A. Meredith, and thus had a direct connexion with the work of Spencer Wells. He was a first-class operator, and liked to do general as well as gynaecological surgery. During the last war he joined the R.A.M.C. at the age of 54, was awarded the Military Cross for attending the wounded under fire, and retired with the rank of major. Probably the war years were among the happiest of his life, as he fitted in well with his battery in France; if he had not got everything he desired in the way of surgical equipment he would purchase what he wanted when on leave rather than wait for things to arrive through the official channels. After the Battle of the Somme he had symptoms of cardiac dilatation, so on his return to England decided not to resume his hospital or private practice again, and spent most of his time at his country estate near Woodchurch, only spending a few months each year in London. As a student Corrie Keep played Rugby football for his university and was reserve for Scotland; subsequently his hobbies were shooting, which he kept up till recently, and the collection of old furniture, on which he was expert. He was unmarried.

Dr. JOHN CHARLES RADCLYFFE HUSBAND, who died last month at Ripon in his 83rd year, was the son of Dr. Charles Husband, Mayor of Ripon in 1860–1. After qualifying as M.R.C.S. in 1881 he joined his father and carried on the practice until his retirement about thirty years ago on account of ill-health. He obtained the M.D. of Durham University in 1899 and served as coroner for Ripon and the Kirkby Malzeard Division of the West Riding up to four years ago. The Ripon and District Hospital owes much to Dr. Husband, for he was largely responsible for the planning of the original cottage hospital and had been chairman of the Committee of Management. He was a member of the City Council for some years, a Justice of the Peace, and a lieutenant-colonel of the 6th Battalion Prince of Wales's Own (West Yorkshire) Regiment, which he commanded from 1909 to 1912.

One of the oldest practitioners of Lancashire has passed away in Dr. JOSEPH BRADLEY, whose entire professional life was passed in the town of Salford. Dr. Bradley was qualified as long ago as 1880, and almost immediately started practice in Chapel Street, Salford, where he remained until his retirement in 1934. In addition to the claims of his practice he took a prominent part in local public affairs, serving on the School Board from 1900, and on the Education Committee which followed it from 1903, and in that position he helped in the development of the school medical services. Dr. Bradley joined the British Medical Association in 1890, but resigned in 1905. At the time of the Insurance Act controversy, however, he rejoined, and remained a member almost until his death, and was chairman of the Salford Division, 1928–31. He was very active as an original member of the Salford Insurance Committee. Salford at that time was one of the areas to which a good deal of attention was devoted owing to what was known as the Salford scheme of administering medical benefit. Under this scheme, which was also adopted in Manchester, payment was made by attendance, and change of doctor was permitted at any time. The original demands of the Salford practitioners were not accepted by the Insurance Commissioners because they involved a suspension of some of the regulations, but Salford had on its Insurance Committee several astute members, Dr. Bradley among them, who devised a scheme which embodied as much as possible of what the profession wanted, while keeping within the provisions of the Act. Salford was also one of the first areas to be the scene of an inquiry into excessive prescribing, and it was Dr. Bradley who pointed out that the cost was due not to the extravagance of individual prescriptions but to the very large number of prescriptions which in a population like that of Salford were demanded. He claimed, further, that his own figures for the economic minimum capitation fee, though rejected at first by the Government, afterwards came to be the basis of medical remuneration.

Professor AUGUST BORCHARD died on February 19 in his seventy-sixth year. He was for many years editor of the *Zentralblatt für Chirurgie* and a leading light in the Deutsche Gesellschaft für Chirurgie. The textbooks on surgery he edited in conjunction with certain other German surgeons became standard works of reference running into several editions. His hospitable home in Posen was visited by many colleagues from abroad, and he was an outstanding figure at international gatherings of surgeons. During the last war he was Generalarzt und Beratender Chirurg.

The following well-known foreign medical men have recently died: Professor HENRY GRAFF, an eminent Bonn surgeon; Dr. EUGÈNE APERT, a distinguished Parisian paediatrist and a prolific writer, aged 71; Dr. CASSAET, honorary professor in the Bordeaux medical faculty; Dr. LOUIS DARTIGUES, an eminent Paris surgeon and former president of the Société de Médecine de Paris and of the Société des Chirurgiens de Paris, aged 71; and Dr. MAX STOOS, emeritus professor of children's diseases at Berne and founder and honorary member of the Society of Swiss Paediatrists, aged 84.

# Medico-Legal

## MATRIMONIAL RIGHTS OF A MENTAL PATIENT

Mr. Justice Bucknill made a queer slip in hearing a divorce action last October. The wife was certified in August, 1931, and sent to a mental hospital. The husband lived with the children at his mother's house, and went to see his wife twice or three times at the beginning of her stay. In July, 1932, he went away without giving a reason and was never heard of again. In September, 1936, the wife was discharged, and in November, 1938, she petitioned for divorce on the ground of desertion for three years immediately preceding her petition. The learned judge refused to grant her a decree, for the sole reason that she had spent the first of the three years in a mental hospital, and therefore no state of cohabitation had existed during part of the three years. The Court of Appeal held[1] that he was wrong. Sir Henry Duke—afterwards Lord Merrivale—said in 1923[2] that there may be no matrimonial home and yet no forfeiture of the rights of the spouses. Desertion is not a withdrawal from a place but from a state of things. The mere fact that when this wife was in the mental hospital it was not possible to have a matrimonial home or for the husband to afford conjugal rights did not seem to the Court of Appeal to be a reason for saying that desertion which in fact took place in 1932 was not effectively operative for three years before the petition. A husband may desert his wife while he is living in a different part of the

[1] Sotherden *v.* Sotherden, 1940, 1 All E.R. 252.
[2] Pulford *v.* Pulford, 1923, P. 18.

world if he does things which amount to desertion. In an example suggested by Lord Justice Goddard, a man goes with the consent of his wife to Australia on a year's business trip; after he has been there three months he writes to his wife and says he is not coming back. If after that he comes back at the end of the year but does not resume cohabitation with his wife the desertion has started from the day he wrote his letter. Intention is one of the most important matters to be taken into account. Several recent cases[3] have shown that a person certified as of unsound mind cannot legally form the intention to desert. That may be hard enough law; it would be even harder if he or she could not be deserted.

## THE VALUE OF EXPECTATION OF LIFE

The right of a parent to claim damages for the loss of expectation of life of a child killed by negligence is perhaps one of the stupidest of all by-products of statute law. Naturally, the assessment of the damages has been extremely difficult. The Court of Appeal dealt with the question, not for the first time, when last December they heard an appeal[4] by a motorist against an award of £1,200 damages in respect of the death of a boy aged 2½. Lord Justice Slesser restated the principle which the court follows: that there is no principle, and that the judge's award is not disturbed unless it is so extremely high as to make it entirely erroneous. In Bailey *v.* Howard[5] the parent of a child killed at 3 years of age was awarded £1,000. In Gambling's case, therefore, his Lordship could not say that £1,200 was hopelessly excessive or altogether improper so as to justify the court in interfering. Lord Justice Goddard disagreed, and pointed to a tendency for these damages to increase. He quoted Lord Roche's words in Rose *v.* Ford[6] expressing anxiety lest this element of damage might assume a frequency and prominence in litigation far greater than is warranted in fact, and might result in the inflation of damages in undeserving cases or—more probably, perhaps—become stale and ridiculous to the detriment of real and deserving cases. Goddard, L.J., pointed to the great difficulty in these cases: that the court is giving a solatium not to the injured child but to the undeserving parent. His idea of a proper sum, based on a decision of Mr. Justice Macnaghton in the case of a child of 4, was £350. Lord Justice MacKinnon contrasted an earlier case before the same Court of Appeal, in which £90 was given, with Bailey's case, in which £1,000 was given, and said that he was hopelessly unable to understand the problem both in those cases and in the present one. In the result the appeal was dismissed, but the three judges expressed a divergence of opinion which reduces the whole matter to an absurdity. It is high time Parliament were asked to abolish this ground of damages altogether.

In the Chancery Division on February 23 Mr. Justice Bennett granted to Dr. Margarita Kitson of Leeds an injunction, with costs, against her next-door neighbour to restrain him from carrying on his fried fish shop in such a manner as to cause nuisance to her by smell, noise, and vibration. Giving judgment, Mr. Justice Bennett said that he was satisfied on the evidence of the plaintiff and her witnesses that nuisance had been caused by smell and noise, though he did not think she had established vibration.

[3] *British Medical Journal*, 1939, **2**, 590, 938.
[4] Gambling *v.* Benham. 1940 1 All E.R. 275.
[5] 1939 1 K.B. 453.
[6] 1937 A.C. 826.

Dr. Detlev W. Bronk, director of the Eldridge R. Johnson Foundation for Medical Physics and of the Institute of Neurology, University of Pennsylvania School of Medicine, has been appointed managing editor of the *Journal of Cellular and Comparative Physiology* of the Wistar Institute of Anatomy and Biology in succession to Edmund Newton Harvey, of Princeton University.

# The Services

## NAVAL MEDICAL COMPASSIONATE FUND

A meeting of the subscribers to the Naval Medical Compassionate Fund will be held on April 19 at 3.15 p.m. at the Medical Department of the Navy, 64, St. James's Street, S.W.1, to elect six directors of the Fund.

## AUXILIARY R.A.M.C. FUNDS

The annual meeting of the members of the Auxiliary R.A.M.C. Funds will be held at 2.45 p.m. on Friday, April 19, at 11, Chandos Street, Cavendish Square, W., when the annual report and financial statement for the year ended December 31, 1939, will be presented and the officers and committee for the current year elected.

## DEATHS IN THE SERVICES

Surgeon Captain GEOFFREY PALMER ADSHEAD, R.N. (ret.), of Ditchling, died in London on March 11, aged 57. He was the fifth son of the late Samuel Adshead of Macclesfield and was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1906, also taking a special certificate in tropical medicine and bacteriology. After filling the post of house-physician and house-surgeon at Salford Royal Hospital he entered the Royal Navy, became surgeon commander on February 19, 1918, and retired recently with an honorary step in rank. He served during the war of 1914–18, receiving the medals. He had been a member of the British Medical Association for twenty-one years.

"J. A. R." sends the following tribute to the memory of Surgeon Lieutenant G. A. MAXWELL SMITH, who was lost on H.M.S. *Exmouth*: He was a splendid friend, the very finest type; a first-class student, full of fun, and a rare fellow at all our end-of-term celebrations. In his six months at the Edinburgh Royal Infirmary Residency in the summer of 1935 as house-surgeon to Mr. G. L. Chiene he was known among his colleagues as a very sound man at his job, gifted with the unusual quality of presence of mind. Off duty, he was the life and soul of our "mess nights." We can hardly realize yet that his charming and virile personality, so bright and active, will be with us no more. But we are all very proud to have known him.

Major-General BENJAMIN HOBBS DEARE, C.I.E., I.M.S. (ret.), who died at Farnham, Surrey, on March 9, aged 72, was educated at the Middlesex Hospital, and took the M.R.C.S., L.R.C.P. in 1889, the Cambridge D.P.H. in 1891, and the M.R.C.P. in 1910. Entering the Indian Medical Service as surgeon on July 28, 1891, he became lieutenant-colonel after twenty years' service, and major-general on appointment as inspector-general of civil hospitals in Bengal on February 8, 1922, retiring on August 27, 1924. He served in the North-West Frontier of India campaign in 1897–8, in Tirah, in the operations on the Samana Ridge and in the Kurram Valley, the relief of Gulistan, the actions of Changru Kotal, Dargai, the Sampagha and Ashanga Passes, and the reconnaissance of Saran Sar, receiving the Frontier medals with three clasps. He received the C.I.E. on June 4, 1921, was surgeon general with the Government of Bengal in 1922, and was Honorary Surgeon to the King from 1922 to 1924. From 1920 to 1923 he was dean of the medical faculty of the University of Calcutta. He was the youngest of three brothers, all of whom were doctors, but the two older ones lost their lives under tragic circumstances while still young: the oldest was lost overboard when serving as a surgeon on a steamer going to Calcutta, and the second, Surgeon A. C. Deare, I.M.S., was killed by a tiger while shooting at Damoh in the Central Provinces of India on May 27, 1892. Major-General Deare had been a member of the British Medical Association for forty-six years.

Major-General GEORGE GRANT TABUTEAU, D.S.O., A.M.S. (ret.), died at New Delhi on March 10, aged 58. He was born on November 19, 1881, the son of Dr. Joseph Manley Tabuteau, and was educated in Dublin at the Corrig School, Kingstown, and at the medical school of the Irish Colleges. He took the L.R.C.P. and S.I. in 1903, and after acting as house-surgeon at Mercer's Hospital, Dublin, in 1903, and as surgeon in Alfred Holt's Blue Funnel line in 1904, entered the Royal Army Medical Corps as lieutenant on January 31, 1905. He became major on October 18, 1915, lieutenant-colonel on December 10, 1928, brevet colonel in 1932, and major-general on April 1, 1937, and at the time of his death was Director of Medical Services in India, the head of the

Medical Department of the British Army in India, an appointment he received in 1937. He served in France and Flanders throughout the war of 1914–18, when he was mentioned in dispatches on three occasions and received the D.S.O. and three war medals; in Waziristan in 1923, receiving the Indian Frontier medal with a clasp; and in operations in Burma in 1932, when he was mentioned in dispatches and promoted to brevet colonel. He was appointed Honorary Surgeon to the Viceroy in 1930 and to the King in 1937. He had been a member of the British Medical Association since October, 1924.

Lieutenant-Colonel EDWARD HENRY MILNER MOORE, D.S.O., R.A.M.C. (ret.), died at Mill Hill on March 5, aged 62. He was born at Coventry on October 28, 1877, the son of the late Dr. Milner M. Moore, who practised at Coventry for forty years before retiring to Eastbourne, was educated at Marlborough and St. Mary's Hospital, and took the M.R.C.S., L.R.C.P. in 1903. After filling the post of assistant house-surgeon at the Coventry and Warwickshire Hospital in 1903, at which institution his father was for twenty years a member of the staff, he entered the Royal Army Medical Corps as lieutenant on January 30, 1904, became lieutenant-colonel on May 30, 1927, and retired on October 28, 1932. He served throughout the war of 1914–18, was mentioned in dispatches on two occasions, and received the D.S.O. He joined the British Medical Association in May, 1935, soon after the death of his father. He was chairman of the medical board at Edgware, and was a part-time examiner of reservists.

Captain ARTHUR FALCONER HAYDEN, I.M.S. (ret.), who died at Hendon on March 8, aged 62, was educated at St. Mary's Hospital, where he gained an entrance scholarship. He took the M.R.C.S., L.R.C.P. in 1900, the M.B.Lond. with honours in materia medica and forensic medicine in 1903, the B.S. in 1904, and the F.R.C.S. in 1906. He entered the Indian Medical Service as lieutenant on September 1, 1905, and at the Army Medical School he gained the Montefiore medal in military surgery and the Martin gold medal in military medicine. He became captain after three years' service, but on January 23, 1910, he was placed on temporary half-pay on account of ill-health, and two years later, on January 23, 1912, was permanently invalided. He returned to St. Mary's Hospital, where he had been assistant anaesthetist and house-surgeon after qualifying, and filled the posts of pathologist to the venereal disease department and assistant in the inoculation department.

# Universities and Colleges

## UNIVERSITY OF LONDON

Because of the war and evacuation it will not be possible for the University of London to hold the annual ceremony of presentation of degrees at the Albert Hall in May. Candidates successful at University examinations since last May should apply for their diploma or certificate in writing to the Principal, University of London, Royal Holloway College, Englefield Green, Surrey. Honorary degrees, which are usually conferred by the University at the Senate House on Foundation Day, were last year conferred *in absentia* in November.

### ROYAL CANCER HOSPITAL (FREE)

The following candidates have been approved at the examination indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN MEDICAL RADIOLOGY.—*Part I:* H. F. Francis, G. A. Macadie, E. Millington, M. A. Stewart, T. A. Watson.

### LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN

The Council of the London (Royal Free Hospital) School of Medicine for Women has decided that its students who have been evacuees at St. Andrews, where they have been taking the first medical course, should remain in the North for the summer term. It hopes to reopen the first medical course in London in October.

## UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

DIPLOMA IN PUBLIC HEALTH.—*Part I (Old Regulations):* D. Campbell. *Part I (New Regulations):* G. R. Thorpe, Lucy H. E. Walker, G. Wynne-Griffith.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—*Part A:* J. C. Kee, W. P. Stevens, S. W. Wherrett, J. White.

DIPLOMA IN TROPICAL MEDICINE.—*Alice Benjamin, P. Borg Mallia, M. P. Browne, Ruth F. Conway, L. H. Crosby, E. S. Dismorr, Frances Dooley, J. M. French, J. D. Fulton, D. B. George, W. R. Grant, Rebecca Koshi, Margaret P. Lyon, I. H. Marrable, J. D. Munroe, W. Z.-A. Quraishii, L. K. Rittenhouse, H. V. ol M. Shaibany, I. Soorani, H. Stott, E. L. Tee, A. H. Wright.

* Recommended for A. H. Milne Medal.

## UNIVERSITY OF MANCHESTER

Dr. K. B. Pinson has been appointed honorary consulting anaesthetist to the Dental Hospital.

Degrees in the Faculty of Medicine will be conferred on Saturday morning, July 6.

The Sidney Renshaw Junior Prize in Physiology and the Dauntesey Medical Senior Scholarship have been awarded to S. B. Rampling.

## UNIVERSITY OF EDINBURGH

A graduation ceremony was held on March 28, when the following degrees and diploma were conferred:

M.D.—W. J. G. Barrie. Lieutenant R.A.M.C. (*in absentia*), J. D. Mill (*in absentia*).

M.B., CH.B.—D. G. Aitken, A. D. F. Corrigall, A. Craig, W. M. Down, H. MacD. Fyvie, A. G. Hassan, V. C. Hassan, J. R. M. Johnston, G. A. D. Lamb, S. M. Mishriki, J. M. H. Mitchell, A. Morgan, Jane J. C. Muir, J. B. Porteous, T. Rutherford, A. Skene, J. M. Sturrock, W. R. M. Sutherland, A. F. Williams, T. M. Wilson.

DIPLOMA IN MEDICAL RADIOLOGY.—J. D. Brown.

## UNIVERSITY OF DUBLIN

### SCHOOL OF PHYSIC, TRINITY COLLEGE

The following candidates have been approved at the examinations indicated:

M.D.—R. E. Hemphill, C. Mushatt, M. F. X. Slattery.

FINAL MEDICAL EXAMINATION.—*Part I (Materia Medica and Therapeutics: Pathology and Bacteriology):* †Elizabeth D. L. Simpson, M. B. Flanagan, A. McC. Russell, W. J. Thompson, Catherine E. Craig, J. P. Hearne, C. W. Lloyd, J. C. Watson, I. Shribman, A. C. MacA. Hobson, Dorothy W. M. Last, J. A. Pearce. *In Completion:* J. E. Adamson. *Part II, M.B.:* †B. Kernoff, †R. J. S. Wilson, R. R. Hogg, R. F. G. Lyons, J. R. A. Martin, H. F. Kamp, W. F. Rogers, H. J. Smith, D. Aiken, Phoebina Eakins, D. R. McCaully, E. Kawerau, Moira M. Mallagh, W. B. Dennehy, F. J. Queally, P. FitzG. Longford, E. G. R. Butler, T. H. Downes, J. G. P. Mullally, F. N. C. Levy, *B.Ch.*; *Lois J. Macaulay, *H. H. Balch, †S. Tennenbaum, D. Aiken, R. J. S. Wilson, M. N. O'Riordan, H. J. Smith, G. H. Blennerhassett, Caroline A. McEvett, Lily H. Bamber, Patricia A. Concannon, Annie Dowds, P. H. Rubenstein, E. Kawerau, T. Shier, W. B. Dennehy, Olive S. H. Devlin, J. R. Healy, F. J. Queally, H. FitzGibbon, J. R. A. Martin, R. M. Halahan, D. O. Hicks, H. F. Kamp, W. M. Winn. *B.A.O.:* †C. P. Clancy-Gore, †J. Moore, †J. M. Slattery, †W. E. O'C. C. Powell, †W. Houston, †E. C. J. Millar, †J. Nash, †F. G. M. Ross, †L. Solomon, †A. E. Tinkler, S. Fine, J. E. Dennehy, Alicia G. Pike, S. O. O. Franklin, L. T. Kelly, B. E. R. Solomons, A. H. H. Guilbride, Edna G. Merrick, D. W. Montgomery, I. Schreider, N. M. Smith, J. M. Taylor, R. St.C. Mooney, H. K. Bourns, Kathleen M. Patterson, E. P. Hill, M. D. Leitch, G. W. E. Little, G. Tattersall, L. C. Jacobson, M. A. Majekodunmi, D. S. M. Enraght-Moony, M. Steinberg, N. H. Stewart.

DIPLOMA IN PUBLIC HEALTH.—*Part I:* *O. F. Warner, *P. A. McNally, †C. F. O'Reilly, †D. K. Sundaresan, †P. J. Mullaney, C. G. Reilly, J. Finegan.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—*Part II:* *J. N. P. Moore.

* With first-class honours. † With second-class honours.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND

### *Election of Professors and Lecturers*

The Council of the College invites applications for election to the office of Hunterian Professor, Arris and Gale Lecturer, Arnott Demonstrator, and Erasmus Wilson Demonstrator for the ensuing year. The twelve Hunterian Lectures are delivered by Fellows or Members of the College, and are illustrated by preparations from the Hunterian Collection and the other contents of the Museum. The three Arris and Gale Lectures are on subjects relating to human anatomy and physiology, the six Arnott Demonstrations on the contents of the Museum, and the six Erasmus Wilson Demonstrations on the pathological contents of the Museum. Applications in writing must reach the secretary by Monday, April 29. Candidates for the Hunterian Professorships and Arris and Gale Lectureships are requested to submit with their applications twenty copies of a synopsis of approximately 500 words describing the subject-

matter of their proposed lecture. In the case of the Hunterian Lectures the Council is prepared to consider applications for either a series of lectures or a single lecture.

*Demonstrations on Pathology*

A special series of demonstrations on surgical pathology will be delivered in the theatre of the College (Lincoln's Inn Fields, W.C.) by Mr. Gwynne Williams on Tuesdays, April 9, 16, 23, and 30, and Thursdays, April 18 and 25, at 5 p.m. The demonstrations are open to advanced students and medical practitioners, and details will be published in the postgraduate diary column of the *Supplement* week by week.

# Medical Notes in Parliament

Parliament reassembled on April 2, when Mr. Chamberlain reviewed the progress of the war. He said the British and French Governments had agreed to close co-operation in all spheres affecting the interests of the two nations. This community of action would be maintained after the conclusion of peace, and the assistance of other nations would be welcomed in European reconstruction. Britain and France had agreed upon close collaboration in their colonies.

### Middle-ear Disease in the B.E.F.

On April 2 Mr. STANLEY informed Mr. Etherton that the number of cases of chronic suppurative middle-ear disease and deafness treated in military hospitals in France bore a proportion to the strength of the British Expeditionary Force only very slightly higher than that which prevailed in the Army as a whole during the three years before the outbreak of war. No reports had been received from Army specialists in this connexion, and an instruction to refuse to pass personnel with this ear disease for service over-seas was not considered necessary.

### Paratyphoid in Glasgow

On April 2 Mr. GROVES asked the Secretary of State for Scotland whether he was aware that although it was known, on or about March 7, that many cases sent to hospital proved to be paratyphoid B infections, and that consequently the sources of infection must have been operative from about February 17, no notice was received by medical practitioners from the Public Health Department of Glasgow until March 16. Mr. COLVILLE replied that the final diagnosis of paratyphoid B on March 7 related to three cases only. It was some days later before there was evidence pointing to an epidemic outbreak, and the warning to medical practitioners followed on the receipt of this evidence. Immediate steps were taken to trace the source of infection.

*Staffing of First-aid Posts.*—On April 2 Mr. GROVES asked the Minister of Health whether he was aware that at a meeting of medical practitioners of Battersea and Wandsworth held some time since a resolution was passed to the effect that the terms for the staffing of first-aid posts were not conducive to the public safety; that practitioners in this area were recommended to refuse service under such terms; that the approval by the Central Emergency Committee of the British Medical Association to such terms was deplored; and whether there had been any change in the terms to which exception was taken. Dr. ELLIOT replied that he was aware of this resolution. No change had been made in the arrangements for the medical staffing of the first-aid posts, which, he was informed, had been put into operation satisfactorily in each of the two boroughs.

*Notes in Brief*

The purchase of books and periodicals published in Germany is prohibited except under licence from the Board of Trade. The only licences granted have been for technical and scientific works, and for a few other publications required here by responsible persons for purposes of national importance.

# Medical News

Professor S. J. Cowell will open a discussion on "Food in Wartime" at a sessional meeting of the Royal Sanitary Institute at 90, Buckingham Palace Road, S.W., on Tuesday, April 16, at 5 p.m. The chair will be taken by Sir Wilson Jameson.

Mr. W. S. Morrison, the Minister of Food, has issued invitations to a meeting to be held at the Queen's Hall, Langham Place, W., to-day (Friday, April 5) at 3 p.m. The meeting will open a national movement for promoting the right use of food in wartime.

A meeting of the Pharmaceutical Society of Great Britain will be held at 17, Bloomsbury Square, W.C., on Tuesday, April 9, at 7.30 p.m., when a lecture entitled "Pharmacopoeia Revision" will be given by Dr. C. H. Hampshire, secretary to the British Pharmacopoeia Commission.

In order to reduce overcrowding and waiting, Maida Vale Hospital for Nervous Diseases, London, W.9, has arranged a system of out-patient appointments, which will begin on April 15. All new patients wishing to attend the hospital for out-patient treatment on and after that date should first telephone, write, or call at the hospital for the purpose of fixing an appointment. The co-operation of all practitioners who refer patients to the hospital will be very much appreciated.

The annual exhibit of the American Physicians' Art Association will be held at the Belmont Plage Hotel, New York, from June 9 to 15. Further information may be obtained from Dr. A. L. Wolbarst, 114, East Sixty-first Street, New York.

Five £60 scholarships to Port Regis Preparatory School are being offered by Sir Milsom Rees to sons of medical practitioners. Candidates must be under 9 years of age on June 11, 1940, the date of the examination. Reduced fees are offered to prospective candidates who enter the school in May. Applications should be made to the Headmaster, Port Regis School, Broadstairs, Kent.

The sixth International Congress for Experimental Cytology, which was to have been held in Stockholm from July 25 to August 1, has been postponed indefinitely.

The King has appointed Dr. John Gray to be a Nominated Member of the Executive Council of the Island of St. Helena.

The Council of the Royal Society of Edinburgh has awarded the Keith Prize for the period 1937–9 to Professor F. A. E. Crew for his papers in the Society's *Proceedings* within the period of the award, and in recognition of his valuable contributions to animal genetics.

The International Union against Tuberculosis announces that owing to the present circumstances the award of the Léon Bernard Memorial Prize has been postponed for two years.

The Senatus of the University of Edinburgh has awarded the Cameron Prize to Professor E. C. Dodds, Courtauld professor of biochemistry in the University of London, for his work on synthetic oestrogens.

The Medical Society of South Carolina celebrated the 150th anniversary of its foundation on December 24, 1939, and is therefore one of the oldest medical societies in the world. The centenary of the Royal Academy of Medicine of Belgium will be celebrated on September 19, 1941.

The title of honorary professor has recently been given to the following professors of the Paris medical faculty on the occasion of their retirement: Carnot (clinical medicine), Claude (psychiatry), Clerc (clinical medicine), and Terrien (ophthalmology).

An Italian Society of Morbid Anatomy has been founded to take the place of the old Italian Society of Pathology under the direction of Professors Pepere, Vanzetti, Sotti, and Businco.

No. 11

# INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 16, 1940.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

*Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for:* (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

| Disease | 1940 | | | | | 1939 (Corresponding Week) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) |
| Cerebrospinal fever | 543 | 51 | 110 | 3 | 5 | 36 | 6 | 8 | 1 | 1 |
| Deaths | | 15 | 9 | | | | 1 | 1 | | |
| Diphtheria | 747 | 45 | 222 | 56 | 38 | 972 | 94 | 203 | 48 | 23 |
| Deaths | 22 | 1 | 7 | 5 | 2 | 27 | — | 6 | 1 | — |
| Dysentery | 29 | 3 | 87 | | — | 28 | 2 | 15 | | — |
| Deaths | | | 1 | — | — | | | — | — | — |
| Encephalitis lethargica, acute | 4 | 1 | — | 1 | — | 3 | — | — | 1 | — |
| Deaths | | 1 | — | | | | — | 1 | | |
| Enteric (typhoid and paratyphoid) fever | 17 | 3 | 142 | 6 | — | 10 | — | 4 | 8 | 3 |
| Deaths | — | — | 2 | — | — | 2 | — | — | — | — |
| Erysipelas | | | 52 | 5 | 9 | | | 81 | 3 | 6 |
| Deaths | | — | — | | | | — | 2 | | |
| Infective enteritis or diarrhoea under 2 years | | | | | | | | | | |
| Deaths | 33 | 2 | 11 | 6 | 10 | 54 | 13 | 4 | 2 | — |
| Measles* | 4,332 | 74 | 82 | | 233 | | 34 | 124 | | — |
| Deaths | 4 | — | 1 | 1 | 11 | 7 | 2 | — | 1 | — |
| Ophthalmia neonatorum | 95 | 6 | 26 | | — | 88 | 13 | 24 | | — |
| Deaths | | | | | | | | | | |
| Pneumonia, influenzal† | 1,588 | 90 | 46 | 11 | 16 | 1,205 | 151 | 17 | 5 | 6 |
| Deaths (from influenza) | 315 | 28 | 28 | 16 | 15 | 176 | 42 | 6 | — | 1 |
| Pneumonia, primary | | | 348 | 23 | | | | 196 | 18 | |
| Deaths‡ | | 93 | | 21 | 27 | | 39 | | 12 | 5 |
| Polio-encephalitis, acute | 2 | — | | | | — | — | | | |
| Deaths | | — | | | | | — | | | |
| Poliomyelitis, acute | 12 | 1 | 1 | 1 | — | 2 | — | 3 | — | — |
| Deaths | | — | — | | | | 1 | 1 | | |
| Puerperal fever | 2 | 2 | 11 | 1 | — | — | — | 14 | | — |
| Deaths | | — | | | | | — | | | |
| Puerperal pyrexia | 191 | 8 | 16 | | 1 | 173 | 11 | 24 | | 1 |
| Deaths | | | | | | | | | | |
| Relapsing fever | — | — | | | — | — | — | | | — |
| Deaths | | | | | | | | | | |
| Scarlet fever | 984 | 58 | 115 | 42 | 42 | 1,739 | 148 | 276 | 38 | 54 |
| Deaths | 1 | 1 | — | — | — | 1 | — | — | — | 1 |
| Small-pox | — | — | — | | — | — | — | — | | — |
| Deaths | — | — | — | — | — | — | — | — | — | — |
| Typhus fever | — | — | — | — | — | — | — | — | — | — |
| Deaths | | | — | — | — | | | — | — | — |
| Whooping-cough* | 565 | 20 | 14 | | 14 | | 338 | 569 | | 75 |
| Deaths | 5 | — | 2 | 3 | — | 24 | 4 | 14 | 2 | 1 |
| Deaths (0-1 year) | 520 | 61 | 97 | 41 | 43 | 383 | 57 | 58 | 34 | 17 |
| Infant mortality rate (per 1,000 live births) | | | | | | 59 | 48 | | | |
| Deaths (excluding stillbirths) | 7,220 | 1,118 | 935 | 267 | 210 | 5,527 | 1,215 | 679 | 182 | 154 |
| Annual death rate (per 1,000 persons living) | | | 17.0 | 17.8 | 18.4 | 13.6 | 15.5 | 13.7 | 12.2 | 13.7 |
| Live births | 6,574 | 1,043 | 913 | 390 | 220 | 6,022 | 1,009 | 861 | 321 | 227 |
| Annual rate per 1,000 persons living | | | 18.5 | 26.0 | 19.3 | 14.8 | 12.8 | 17.4 | 21.6 | 20.1 |
| Stillbirths | 278 | 32 | 32 | | | 238 | 34 | 41 | | |
| Rate per 1,000 total births (including stillborn) | | | 34 | | | 38 | 33 | 45 | | |

* Made notifiable generally on November 1, 1939.
† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.
‡ Since January 1, 1940, figures for London (b) have been for deaths from all forms of pneumonia; the corresponding figures for 1939 relate to deaths from lobar pneumonia only.

## EPIDEMIOLOGICAL NOTES

### Infectious Diseases for the Week

Diphtheria and scarlet fever have increased in incidence somewhat in England and Wales (and in London) during the week, but both measles and pneumonia (primary and influenzal) have decreased. Deaths from influenza fell by more than one-quarter, but the number is nearly twice that for the corresponding period last year. In London deaths from influenza were the same as in the previous week and fewer than were recorded last year. It appears that the epidemic of rubella is now on the wane, but exact figures are not to hand, as the disease is not generally notifiable. In some districts, however, it continues to be rife and even to be on the increase: for instance, in Manchester there were 149 cases during the week compared with 98 in the previous week, and 192 cases were notified in Derby.

For the second week notifications of cerebrospinal fever have dropped in the whole country, but in London and in Scotland the disease appears to be on the increase. The number of deaths in London relative to cases suggests that response to treatment has been less successful than in selected series already recorded, but allowance must be made for the lag between notification and the fatal issue. Of the sixty-one administrative health districts fifty reported cases of cerebrospinal fever, the same number as in the previous week. More than 20 cases were notified in London 5f (6 each in Lambeth and Wandsworth); Lancaster 45 (Liverpool 15, Manchester 8); Glamorgan 33 (Cardiff 10, Swansea 5); Yorks, West Riding, 28 (Sheffield 9, Leeds 6); Stafford 23 (widely distributed in urban and rural areas); Kent 22 (Canterbury 5, Margate 3); Surrey 22 (of which 5 were in Guildford); Warwick 21 (Birmingham 16, Coventry 4). In Scotland 33 areas were involved compared with 27 in the previous week. More than 2 cases were recorded in the counties of Ayr 9, Moray and Nairn 5, and in the burghs of Glasgow 25, Edinburgh 22, Aberdeen 8.

#### PARATYPHOID IN SCOTLAND

Particulars of the paratyphoid fever outbreak in Glasgow and district, referred to in these columns last week, are available in this week's returns. Of 115 cases notified 56 were in Glasgow, 13 in Paisley, 9 in Coatbridge, 1 in Clydebank, while there were 19 in Renfrew County, 15 in Lanark, 1 in Dumbarton, and 1 in Fife. Of these, 114 were paratyphoid B infections and 1 paratyphoid A. The latest reports indicate that there have been nearly 300 cases to date, but notifications are falling daily. The wide distribution of the disease suggests that some article of food prepared or handled at a central factory or warehouse is the medium whereby the infection is spread, but so far all investigations of foodstuffs have been negative.

### Quarterly Return of Births, Deaths, and Marriages

*Scotland.*—In the quarter ended December 31, 1939, there were 86,899 live births registered in Scotland, equivalent to a rate of 17.4 per 1,000. This figure is 0.4 below the average of the five preceding years, and is the lowest ever recorded in Scotland. The previous lowest was 17.6 in 1933. Illegitimate births amounted to 6 per cent. of the total births, and is the lowest recorded for Scotland. Deaths from all causes numbered 64,413, equal to an annual death rate of 12.9 per 1,000; this figure is above that for the previous year, but 0.3 below the last five-years average; with the exception of that for 1938 it is the lowest hitherto recorded. The infant mortality rate was 69 per 1,000 live births; this is 1 below that of the preceding year and 8 below the average of the last five years, and is the lowest recorded. Among legitimate children the rate was 67, and among illegitimates 96 per 1,000. Of the infectious diseases causing death influenza displaced measles as the chief killing disease, while the increase in mortality from whooping-cough was offset by decreases for scarlet fever, diphtheria, cerebrospinal fever, and typhoid fever. For the whole group of epidemic diseases the death rate was 41 per 100,000, the same as in the previous year.

*Eire.*—In the last quarter of 1939 there were 13,218 births, equivalent to a rate of 18 per 1,000 population, or 0.2 below the rate for the corresponding period of 1938. Of the total births 413, or 3.1 per cent., were illegitimate. Deaths numbered 9,429, or 12.9 per 1,000, being 1 below that for 1938. The infant mortality rate was 62 per 1,000 births registered, compared with 66 for the previous year. Deaths from the principal epidemic diseases were at a rate of 40 per 100,000 population, which is 10 below that recorded in 1938.

# Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

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## QUERIES AND ANSWERS

### Reading without Arms

Mr. E. G. SLESINGER, M.S., F.R.C.S., writes: In reference to the query of "X. Y. Z." (March 30, p. 558) in regard to the turning over of the pages of a book in bed by a patient who has lost the use of both arms, he might find a device which I used in the last war for such cases of use. The instrument employed was the type of arrow with a rubber suction disk on one end which is sold with spring guns for children. By attaching a flat flange at the end opposite to the disk the arrow can be readily grasped in the patient's teeth, and if the book is on a reading desk pressure on the page and a lateral movement of the head readily turns the page.

### Potassium Chloride for Hay Fever

Dr. BOWMAN EDGAR (Kirkconnel) writes: Your "Queries and Answers" column (March 30, p. 558) contains a request from Dr. T. Pires for information on the use of pot. chlor. in the treatment of the coryza of hay fever. If your correspondent will try the effect of 5 grains ex aq., t.i.d., she will, I hope, be satisfied with the result. She may find that in some cases a single dose in the morning suffices to keep the patient in comfort more or less all day. It is said that the dosage of 10 grains is apt to lead to gastric unpleasantness.

### Income Tax

*Appointment—Car Expenses*

"MEDICAL OFFICER" bought a car in October, 1937, while acting as a resident M.O. On May 1, 1938, he became a deputy M.O.H., using the car but receiving no car allowance. On September 11, 1939, he took over a combined post, one authority paying £20 per annum and the other a mileage allowance. What claim can he make?

*** As regards his present appointment the Revenue will probably decline to regard the allowances received as being inadequate for his needs and will refuse any income tax claim—of course, on that basis the sums received will not be included in his assessment. For the period, however, from May 1, 1938,

to September 11, 1939, he is entitled to claim, under the "error or mistake" provision, that his returns were excessive as no claim for a deduction of car expenses was made. The amount deductible should be calculated by computing the whole running costs of the car, adding 20 per cent. of the capital value as at May 1, 1938, for depreciation, and applying the ratio of the professional to the private mileage.

*One Partner on Military Service*

"T. H." puts the following query. A. and B. are partners on an equal basis. B. is on military service and his pay is treated as partnership income. The inspector of taxes advises that "the gross military pay is to be credited to the firm's receipts and tax assessed as follows: Taking £*x* as the agreed income of last year, and £*y* as the gross military pay for this year, A. pays tax on 1/2 (£*x* + £*y*), and B. tax on 1/2 (£*x* + £*y*) − £*y*—as B. has already paid tax on £*y* by deduction from his pay." Is this correct?

*** Yes—the War Office must tax B.'s pay as his personal income, and consequently some adjustment should be made in the apportionment of the Schedule D assessment on the practice, otherwise B. would suffer tax on an excessive amount and A. would be correspondingly favoured. It is possible that the division of the assessment may not affect the total tax payable, but it may affect allowances and reliefs, or, possibly, surtax liability.

*Medical Board—Travelling Expenses*

"W. P." attends several boards per week at a distance of fifteen miles from his home. The return journey consumes a gallon of petrol and involves other expenses. What deductions can be made?

*** If "W. P." is in general practice the simplest way is to include the fees in his general receipts, leaving the expenses to be deducted in the usual way. If, however, the fees have to be assessed separately under Schedule E there is no legal claim to deduct the expenses as they are incurred not "in the performance of the duties" but in order to reach the place where the duties are performed.

*New Partnership*

"J. S." puts the following query. A. employed B. as an indoor assistant for the two years to March 31, 1938, at £400 for the first year and £500 for the second year. As from that date another practice was taken over, and A. and B. became partners on an equal-share basis. The inspector of taxes has agreed to treat the practice as continuing, and has arranged for an assessment for 1938–9 on £800 (1937–8 profits) plus £500 (B.'s salary), plus £100 assistant's board—that is, £1,400 in all. In addition B.'s assessment for 1937–8 has been increased to £500. Is this correct, and how should the assessment of £1,400 be divided between A. and B.?

*** 1937–8 is B.'s final year as A.'s assistant, and he is chargeable on the amount of his earnings for the current year; the increase of his assessment to £500 for that year is therefore correct. The correct basis for the partnership assessment for 1938–9 is £800 plus the amount of the profits of the practice taken over; if the latter amount is less than £600 the proposed assessment of the £1,400 is excessive. What the inspector has done is to aggregate the profit of £800 with B.'s earnings as an employee, which may be convenient and may approximate in result to the current amount, but is not supportable in law. If "J. S." considers that £600 may be received from the additional practice he may be inclined to accept the £1,400; if there is likely to be a substantial difference he would be well advised not to accept the continuing basis as it has been applied by the inspector. Whatever the amount of the assessment the "equal-share" basis should be applied in dividing it between the partners; "B." is entitled for 1938–9 to a half-share of the profits, and the amount of his earnings as an employee in 1937–8 is irrelevant to that question.

*Rate of Tax Deductible from Interest: 1939–40*

"R. H. C." makes gross payments of interest, £33 15s., on April 1 and October 1. On making the payment last October he deducted £9 5s. 6d.; how much should he deduct from the payment due April 1, 1940?

*** The rate of tax, as increased by the "No. 2" Finance Act of this year, is 7s. But when the October 1 payment was made "R. H. C." could not legally have enforced deduction of that rate, and he is entitled to adjust the under-deduction of tax on making the April payment. He should deduct £14 7s. tax, being 7s. in the £ on the current half-year's interest (that is £11 16s. 3d.) plus 7s. − 5s. 6d. = 1s. 6d. in the £, insufficient deduction last October (that is, £2 10s. 9d.).

# LETTERS, NOTES, ETC.

## Why Drink Milk?

Dr. HILARY MAYES (Magherafelt, Co. Derry) writes: With reference to the recent correspondence on the suitability or otherwise of cow's milk as a food for the human being, I also should be glad to know of an equally efficient and cheap substitute. Among the Yoruba tribe in Southern Nigeria milk is regarded as an essential part of the diet of children up to the age of 3 years. The cows there, such as they are, are unsuitable for the production of milk for human consumption, and the only other available source of milk for the child is the mother, who suckles her child up to the age of 3 years. In order that a second pregnancy may not occur until the first child is weaned, the parents, after its birth, separate for three years. This custom naturally leads to polygamy, and family life, such as we know it, is therefore unknown among this tribe. If we wish to introduce civilization to this country—and surely family life is the basis of civilization—we must ensure that husband and wife can live together in comfort, without the continual fear of a second pregnancy ruining the chances of survival of the elder child by removing an essential constituent of its diet. In civilized countries when the child is weaned the mother's milk is usually replaced by cow's milk. If there is an efficient and cheap substitute perhaps the Yoruba might be induced to try it. Secondly, the ingestion of small numbers of tubercle bacilli in cow's milk will produce an immunity not only to bovine but to human tuberculosis. Among the Yorubas, with their non-milk-drinking habits, tuberculosis is rampant, and the native appears to have little or no resistance to it. If we give up entirely our habit of milk-drinking shall we not be throwing away one of our means of immunization, so robbing Peter to pay Paul? Lastly, in the *Journal* of March 16 (p. 460) the Japs, Chinese, and Eskimos are cited by Dr. James Adam as virile, non-milk-drinking races. But what of the mortality among infants and young children? Among the Yorubas the death rate of infants and children is appalling, and towards this an unsuitable diet makes its not inconsiderable contribution. Milk as a drink is replaced by fluids made from dried banana and gari root: but are these efficient substitutes? Certainly they are no substitutes to the infant whose mother dies at its birth, or to the child under 3 years who is succeeded by its unwanted brother or sister. Of these the former always and the latter usually dies, solely for the want of suitably prepared cow's milk.

## Nocturnal Enuresis

Dr. D. CAMPBELL WATT (Southern Rhodesia) writes: In the *Journal* of January 6 (p. 8) Dr. Doris M. Odlum states: "It may be laid down as an axiom that, whatever the cause of bed-wetting, scolding and punishment should never be employed: first, because it never cures the trouble; and secondly, because it seriously damages the child's personality. . . ." Dr. Odlum then enters upon a learned disquisition on the physical and psychological causes of the condition and lays down the corresponding methods of treatment. In this connexion I should like to quote the case of a new boy (aged 11 years at least) who was found with a pool of urine under his bed (in spite of the waterproof sheet he had brought) on his first morning in a Natal boarding school. A fuss was made by the other occupants of the dormitory. The culprit protested that he couldn't help it, and that all sorts of cures had been tried by a host of doctors and others. He was told that he wasn't to do that sort of thing here, and warned that if he did it again he was for it. He did it again, and the big hefty Dutch prefect made him bend over and gave him six of the best. That cured him; and the cure was permanent, as next term he left his waterproof sheet at home. Whether this violent treatment damaged his personality I do not know. Of course, that was thirty years ago, and before the sweet reasonableness of modern psychological methods had penetrated the skulls of school prefects.

## Ampoules for Drugs

GLAXO LABORATORIES, LTD. (Greenford, Middlesex) write: The concluding paragraphs of Mr. M. Mamourian's letter (*Journal*, March 23, p. 505) suggest a failure of our use of your advertising columns. Will you permit publication of the information that there has been available since April, 1932, an ampoule to a specification somewhat better, even, than that given by Mr. Mamourian. The "G.L." ampoule has an opening of some three-sixteenths of an inch in diameter, wider, therefore, than the one-sixth of an inch quoted, and it has a flat base and stands upright on a bench or table.